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**Studies in Naval Leadership:
Methods, Results, and Applications
Final Technical Report**

CARROLL L. SHARTLE AND RALPH M. STOGDILL

STUDIES IN NAVAL LEADERSHIP

conducted under contract with the
OFFICE OF NAVAL RESEARCH

N6ori-17 T.O. III NR 171 123



THE OHIO STATE UNIVERSITY
RESEARCH FOUNDATION
COLUMBUS, OHIO

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Columbus, Ohio

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PREFACE

This report concludes the presentation of results obtained from the study of Navy organizations by the Ohio State Leadership Studies. The primary purpose of this report is to provide a manual of methods and a brief summary of findings which may serve as a basis for evaluating the usefulness of the methods.

The Studies in Naval Leadership project is one of several research projects of the Ohio State Leadership Studies being conducted by the Personnel Research Board. Other studies are being carried out in the Air Force and in business and educational organizations.

The Studies in Naval Leadership project will be continued, but the research will be concerned in the future with the study of small groups.

The present research has depended upon the co-operation of many persons and agencies. The authors are especially indebted to the Office of Naval Research, the Bureau of Naval Personnel, and the Ohio State University Research Foundation for financial, technical, liaison, and administrative support which made the research possible. Special thanks are due the Navy officers and civilian personnel who participated in the research. Finally, the authors wish to express their thanks to their colleagues of the Ohio State Leadership Studies staff for their helpful co-operation.

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I. OBJECTIVES

In accordance with Navy policy of sponsoring basic research, the Studies in Naval Leadership have been designed as basic research projects. However, as an aid in keeping the research oriented toward operative problems, the objectives have been stated in practical terms. These objectives, as formulated at the beginning of the research were as follows:

- A. To conduct a study of leadership in Naval establishments. The primary methods to be employed are:
 1. A modified job analysis of leadership positions.
 2. An analysis of organization structures in relation to the purposes and functions of the organization.
- B. To determine the value of various methods of appraising leadership performance.
- C. To determine the relationship between leader performance and group effectiveness.
- D. To prepare a classification of positions of leadership as found in various segments of society, giving special attention to the relationship and probable transferability between positions of leadership in civilian and military life.
- E. To develop facts and methods for use in the selection, training, assignment, and transfer of persons for positions of leadership.

Progress has been made toward the accomplishment of each of these objectives. However, because only a limited number of civilian organizations were studied, the results relative to objective D must be regarded as very tentative because of the small number of civilian organizations studied.

II. HISTORY OF THE PROJECT

This project was activated on June 1, 1946, as the result of a contract between the Office of Naval Research and The Ohio State University Research Foundation. Work was begun on July 1, 1946, with the appointment of a full-time research associate as associate director of the project. The research described in this report was terminated on August 31, 1953.

First Year, July 1, 1946 to July 1, 1947. During the first year, the project was operated with one full-time senior investigator and one part-time student clerical assistant. The first task undertaken was a survey of the literature on leadership in order to determine what had been done and what needed to be done. Concurrently, various methods were developed for use in carrying out the objectives outlined for the project. The methods were given an initial test in the study of a District Command Staff. On the basis of this study all methods were completely revised. The methods were again revised after the study of a Naval Training Station.

Second Year, July 1, 1947 to July 1, 1948. During the second year, studies were made of a Naval Air Station and of selected units within the Bureau of Naval Personnel. The resulting data were analyzed and methods were completely revised. Local business firms, military personnel, and groups of university students were utilized for further testing of methods.

Third Year, July 1, 1948 to July 1, 1949. A pilot study of a single submarine was made during the third year. Forms were tested and revised until no further improvement was obtained in reliability, internal consistency or validity. During this year a technical report was issued presenting the results obtained on the first five organizations studied, and comparing four of these naval organizations with four business organizations which were studied in another of the Ohio State Leadership Studies projects.

Fourth Year, July 1, 1949 to July 1, 1950. At the beginning of the fourth year, the forms to be employed were prepared in final revisions, and have been used with little alteration since. A Naval Air Station was studied in order to compare logged time with estimated time. Ten submarines were studied in order to test the general hypothesis that the morale of followers and effectiveness of a unit of organization will be related to the behavior of the leader, and further to determine some of the variables related to leader effectiveness.

Fifth Year, July 1, 1950 to July 1, 1951. During this year, thirty-three naval organizations were studied as the beginning of an

experiment designed to determine the usefulness of the methods for predicting leader behavior. Follow-up studies were made after six months in nine of these organizations in order to obtain data for checking on the accuracy of the predictions which were made by members of the Ohio State Leadership Studies staff and by naval officers.

Sixth Year, July 1, 1951 to July 1, 1952. Sixteen organizations were studied during this period. These included thirteen organizations which were restudied in order to check on the accuracy of predictions. One organization participated in a study of the relation between the behavior of a leader and the expectations of his followers. Another organization was studied twice, with one month intervening, in order to determine the extent of organization change over a short period of time and in order to determine the test-retest reliability of methods.

Seventh Year, July 1, 1952 to August 31, 1953. This year was spent in a continuation of the analysis of data. Eleven technical reports have been written. These reports describe various studies which have been carried out by the project during the years 1950 to 1953.

III. SUBJECTS OF THE RESEARCH

From the beginning of this research "it has been assumed that persons who occupy positions which are commonly presumed to demand leadership ability are proper and likely subjects for the study of leadership. This assumption points to the study of persons who occupy executive and administrative positions in formal organizations in business, industry, education, military services, and the like"(1) For this reason, commissioned officers were selected as the primary subjects of the research in Navy organizations. Enlisted men served as subjects in one organization, and civilian administrators and research personnel served as subjects in several organizations. The following Naval personnel participated in the research:

Commissioned Officers	909
Civilian Administrators and Research personnel	117
Enlisted Personnel (Submarines)	<u>637</u>
Total	1713

An attempt was made to study all commissioned officers in small organizations. When the number of officers in an organization exceeded 30, an attempt was made to study all of those in the top echelons, and

to study those in lower echelons who occupied positions similar to the positions sampled in previously studied organizations.

No attempt was made to study officers or positions at random. As some of the major hypotheses to be tested by the research required matched samples of positions, the samples were drawn to satisfy these designs when it was not possible to study all the officers in an organization. For this reason, it is not claimed that the present sample is representative of Navy officers in general. The military rank of the officers is shown in the following table. In the right hand column of the table are shown the percentages of Navy officers holding various ranks as of January 1, 1953. These percentages are based on all line officers and all officers in the Naval Supply Corps and the Naval Medical Corps.* Reserve officers are excluded. It is probable that if reserve officers were included the percentages in the lower ranks would be increased.

Inspection of Table 1 reveals that the present sample when compared with the total sample of Navy officers (line, supply, and medical combined) is over-represented by captains and lieutenants junior grade, but is under-represented by lieutenants, ensigns, and warrant officers.

TABLE 1. MILITARY RANK OF SUBJECTS

Rank	Number	Per Cent	Per Cent (Navy)
Admiral	9	1.0	.6
Commodore	1	.1	
Captain	115	12.6	6.4
Commander	119	13.1	11.9
Lieutenant Commander	154	16.9	15.0
Lieutenant	196	21.6	30.3
Lieutenant (J.G.)	231	25.4	11.5
Ensign	48	5.3	10.0
Warrant Officer	36	4.0	14.3
	909	100.0	100.0

* U. S. Navy. Register of Commissioned and Warrant Officers of the United States Navy and Marine Corps, January 1, 1953. Washington: Government Printing Office, 1953.

The types of positions occupied by the commissioned officer subjects are shown in Table 2. More than fifty different Navy billets are represented in this list. However, it is not claimed that the sample is representative of Navy billets in general.

In Table 2 are also shown the numbers of officers in each billet who returned incomplete forms or forms that were not usable. Failure to respond or returning incomplete forms does not appear to be a characteristic of any particular type of billet. Approximately 3.5 per cent of the subjects returned unusable forms.

TABLE 2. NUMBER OF COMMISSIONED OFFICERS OCCUPYING VARIOUS POSITIONS; NUMBER OF INCOMPLETE FORMS

Type of Position	Number	Incomplete Data
Commandant, Commander	17	2
Chief of Staff	10	
Commanding Officer	58	4
Executive Officer	52	3
Company Commander	20	1
Administrative Assistant	20	2
Aide	6	1
General Inspector	2	
Planning	8	1
Research, Statistics	25	1
Naval Reserve Coordinator	12	
Personnel (General)	13	
Personnel (Specific)	35	1
Training (General)	12	
Training (Specific)	21	
Type Training (Aircraft)	19	2

TABLE 2. (Continued)

Type of Position	Number	Incomplete Data
Education	6	
Chaplain	6	
Welfare	5	
Administration (General)	6	
Legal	10	
Public Information	22	
Publications, Postal	19	
Staff Secretary	2	
Operations (General)	13	
Operations (Specific)	41	1
Navigation	7	
Communications	50	3
Electronics	18	
Gunnery	60	2
Deck, Boat Officer	8	
First Lieutenant	21	
Intelligence, Security	11	
Logistics (General)	4	
Public Works	9	
Supply, Material	50	
Ship's Store	7	
Commissary	9	2

TABLE 2. (CONTINUED)

Type of Position	Number	Incomplete Data
Accounting	17	
Transportation	6	
Medical	21	
Dental	8	
Engineering	58	3
Electrical	10	
Damage Control	9	
Aircraft Maintenance	12	1
Ground Controlled Approach	4	1
Aerology	3	
Hydrographer	13	1
Base Maintenance	18	
Unassigned, In Training	4	
Miscellaneous Assignments	<u>12</u>	<u>—</u>
Total (Commissioned Officers)	909	32

The present research is based not only on a sample of persons, but also on a sample of organizations. This sample includes 45 naval ships and 31 naval shore units. The specific types of organizations studied, and the numbers of each type, are listed in Table 3. Twenty-two of the organizations were studied twice.

TABLE 3. ORGANIZATIONS STUDIED

Type of Organization	Number Studied	Restudied	Total
Secretary of Defense and Chief of Naval Operations (Selected Units)	6	6	12
A Naval Bureau (Selected Units)	1		1
Naval District Staffs	3	2	5
Command Staffs	5	1	6
Research and Development Command	1		1
Naval Training Organizations	3	1	4
Naval Air Stations	1	1	2
Cruisers	2	1	3
Destroyers	4		4
Submarines	11		11
Mine Ships	3		3
Landing Ships	2	1	3
Landing Ships (LST and LSM)	10	9	19
Supply Ships	1		1
Hydrographic Ship	<u>1</u> 54	<u>22</u>	<u>1</u> 76

The size of the samples drawn from the organizations ranged from one to 183 persons. It may be seen in Table 4 that 52 of the organization samples contain fewer than ten persons. The 68 smaller organizations (with numbers under 30) represent all commissioned officers attached, except those ill or absent on duty. The eight larger organizations (with numbers larger than 29) represent selected samples of subjects. The figures in the right hand column of Table 4 indicate the number of subjects who returned incomplete or unusable questionnaires or failed to return their questionnaires. Size of organization sample does not appear to be an important factor in determining the percentage of incomplete returns.

TABLE 4. NUMBER OF INCOMPLETE FORMS AS RELATED
TO SIZE OF ORGANIZATION SAMPLE

Size of Organization Sample	Number of Organizations	Number of Incomplete Forms
50+	1	1
40-49	3	6
30-39	4	3
20-29	7	4
10-19	9	3
1-9	<u>52</u>	<u>15</u>
Total	76	32

All commissioned officer ranks in the Navy structure were sampled. A wide variety of Navy positions was studied. The sample of organizations included both ships and units ashore. These samples are widely inclusive, if not strictly representative of the Navy structure in general.

IV. PLAN OF THE RESEARCH

The plan of a research project will be determined to a large degree by the objectives of the research and by the nature of the hypotheses which underlie the statement of these objectives.

The present project, in its statement of objectives, committed itself to the development and use of specified methods, and to the development and testing of information through the use of these methods.

Shartle (1, 15) in initiating the Ohio State Leadership Studies advanced the hypothesis that the pattern of leadership found in a given position will be determined in part by the performance demands made upon that position. Should this hypothesis be substantiated, then the problem of leader selection might be reduced to the following aspects: (a) determining the minimum number of behavior patterns that describe the various kinds of leadership, (b) determining which patterns are found in which situations, (c) determining which aspects

of behavior are most highly conditioned by the nature of the situation and the extent to which they are so conditioned, and (d) determining the degree of effectiveness of different patterns of behavior under each of a minimum number of representative circumstances. The problem thus redefined is considerably more complex than that envisioned in the traditional approach to the selection of leaders.

For the reasons cited above it was decided at the outset of this project to develop methods for describing rather than evaluating the behavior of persons in positions of leadership. The isolation of criterion variables was regarded as of secondary importance. It seemed necessary first of all to determine what patterns of behavior exist and under what circumstances they occur, in order to establish a basis for the development of criterion measures.

This decision represents a marked departure from traditional approaches to the study of leadership. It has been standard procedure in the study of military and industrial leadership to set up a criterion against which predictive measures could be validated. This procedure is based on the implicit, if not always stated, assumption that leadership is a generalized and unitary trait or form of behavior. A review⁽¹³⁾ of research conducted from this point of view suggests that it has not been very productive in solving problems of leader selection and placement.

Recent theoretical and experimental studies suggest (1) that the nature of the leadership of a group is an outgrowth of group processes; (2) that varying degrees of leadership may be exercised by different members of the group; (3) that the balance of leadership influence exerted by different members may change from time to time; and (4) that the variables which determine leadership status are numerous, complex, and constantly changing; and (5) that the type of leadership required by a group is dependent upon the nature of the group and its mission. If any of these assumptions be true, then it seems difficult to accept the idea of a generalized criterion of leader effectiveness.

Inasmuch as this project is interested in the selection and assignment of persons for positions of leadership, it is necessarily interested in the prediction of individual performance. This is in itself a difficult problem. But it also seems necessary to consider the effects of these performances upon the performances and interactions of other persons, and the resulting effects upon some end performance of the organized group of which all these persons are members. It is for this reason that the project has concerned itself with matters of group organization, rather than stopping with the isolated individual.

The nature of the hypothesis to be tested suggested the use of job analysis and organization analysis as methods for the research.

Decisions Relative to the Development of Methods

Rather than repeat previous studies on (1) the personal traits of good leaders, (2) the techniques of good leadership, and (3) the selection of good leaders, it was decided in the present research to concentrate upon the task of developing methods for determining (1) what leaders do, (2) how they get their work done, (3) with whom they work, and (4) the structure of the organization in which they work.

As a result of this decision, the total methodology developed for the Studies in Naval Leadership consists of (1) interviews with administrators who are the subjects of the research, (2) a study of organization charts and manuals, (3) the determination in so far as possible of the mission and objectives of the total organization and of its departments and subdivisions, (4) a modified job analysis of administrative performance, (5) a study of responsibility-authority-delegation status, (6) a sociometric study of working relationships, (7) descriptions of "leader behavior" by the leader himself and by other members of the organization, and (8) measures of individual and unit effectiveness. These methods comprise an integrated battery of research procedures.

It was decided to collect data in quantitative rather than qualitative terms. This resulted in the development of measuring devices rather than case study methods. The decision was based on extensive experience in the analysis of data collected by case study methods, which were rejected for the following reasons: (1) different methods are likely to be used for the study of different types of cases; (2) data are likely to be collected on different variables for different cases; and (3) qualitative data, although collected systematically in every case, are difficult to categorize and analyze.

Since the subjects of the research were busy administrators, it was decided to reduce to a minimum the time required to fill out forms and scales. This resulted in the development of scales with lower reliabilities than is necessary for the useful prediction of individual performance. However, the leadership problem as conceived involves such a large complex of variables that it was decided to make maximum use of individual items of measurement, rather than rely upon a few highly reliable scores, each derived from a large battery of items.

Although the use of items and scales with low reliabilities requires that results be interpreted with caution for any single sample of persons or organizations, the replication of samples lends some confidence to any consistent results that may appear. Likely leads for further research may be tested later with more reliable measuring devices.

Some of the decisions which affected the selection of research methods also determined the nature of the theoretical research design developed for the research.

Decisions Relative to Research Design

A structured research design was adopted for the present research for the following reasons:

- (a) In studies which involve comparisons among cases (persons, groups, organizations, etc.) it seems important to define concepts and variables carefully and to stick with them from the beginning to the end of the research. When flexible or changing variables are employed the degree of comparability of the resulting sets of data is not known.
- (b) In studies which involve the investigation of a wide variety of variables it seems important to specify and outline the variables to be studied so that their presence or absence or degree of presence can be determined in each case. If this is not done, it may be difficult to determine whether the failure to find a variable in a particular case or group of cases was due to its absence or due to the failure to look for it through lack of definition.
- (c) In studies which involve the investigation of relationships among variables it appears desirable to state the nature of possible or expected relationships in the form of hypotheses that can be tested. If this is not done, the data may be collected in forms that will be unsuitable to testing the relevant hypotheses which may emerge after the data have been collected.
- (d) The use of structured designs does not preclude the discovery of unique and unanticipated findings. Since a structured design seeks to establish a logical system of relationships among the variables under study, it should facilitate the detection of areas in which information is contradictory or missing.

The Theoretical Research Design

In previous reports from this project it has been suggested that leadership can be described in terms of the structures of relationships that exist among the members of an organized group. It was suggested that the presence of leadership in a group is evidence of role differentiation relative to a common task, and, therefore, of group organization. If group organization defines the structure of responsibility and authority differentiations that are recognized among the members who are participating in a common enterprise, and leadership describes the differentiation of roles relative to responsibility and authority among these same members, then it would appear feasible to study leadership and organization in terms of the same variables.

A major practical advantage to be derived from this point of view is the application of a large body of previously isolated experimental techniques (e.g. behavior analysis, job analysis, organization analysis, interaction analysis) to the leadership problem.

There appear to be three classes of variables which must be taken into account in a study of leadership: (1) role differentiations (the members differ in duties and status), (2) performance variables (the members act, perform tasks, make decisions), and (3) interaction variables (the members communicate with one another, work together, interact on an informal basis). Methods have been devised by this project for the measurement of various segments of these three classes of variables. Each of these classes of variables is composed of many subcategories. It is possible in a single research project to study only a few of them.*

The categories of variables studied in this research are outlined in Table 5. Under "Object of Measurement" in the left hand column are shown the factors we should like to measure as completely and adequately as possible. In the right hand column are listed the proposed measures of the factors we wish to study. The extent to which the proposed measures do in fact measure the theoretical factors must remain a matter of interpretation of the research findings.

The variables to be studied are listed under items A1, A2, and A3 in the table. Items A2(c), A4, B1, B2, B3, C1, C2, C3, and C4 represent subdesigns within the total theoretical research design. The variables listed under items A1, A2 and A3 are conceived as mutually interdependent and under constant interaction and change. The basic data for the entire research were derived from the attempts made to obtain measures on these variables. The same variables were employed in a variety of studies and "experiments" designed to test a number of hypotheses relative to the nature of leadership in organized groups.

The outline presented in Table 5 is not regarded as representing a theory of leadership or of organization. It is intended, rather, to depict the design of the research described in this report. It is believed that this design is logically consistent with a larger and more encompassing theory of leadership and organization. The fact that the small system of variables used in this research has proved equally serviceable in a wide variety of subdesigns, all logically interrelated,

* It will be noted that, in the above scheme, little account is taken of the personality of the leader. As the result of an analysis (13) of a large number of studies of the traits of leaders, it was decided in the present research to direct attention to the effects of the behavior of leaders upon their followers, rather than to study leaders as isolated individuals. The variables investigated in this research were selected because they were regarded by the investigators to be critically relevant to a study of leadership. However, it was not assumed that thousands of other variables which were not studied in this research are without relevance to leadership.

attests to the usefulness if not to the validity of this point of view.

TABLE 5. DESIGN OF THE RESEARCH

Object of Measurement	Measures
A. Within Organizations	
1. Formal Structure (Role Definition)	
a. Horizontal Differentiation	Job Specifications
b. Vertical Differentiation	Level in Organization
2. Operative Organization (Functional Leadership)	
a. Horizontal Differentiation	Work Performance Scores
b. Vertical Differentiation	RAD Scores
c. Personal Interactions	
(1) Working Relationships	Sociometric Scores
(2) Relation of Leader Behavior to Performance of Followers	Discrepancy Scores Correlation Coefficients
3. Effects	
a. Unit Effectiveness	Unit Effectiveness Scores
b. Leader Effectiveness	Leadership Ratings
4. Organization as Constellation of Interacting Variables	Correlation Coefficients
B. Across Organizations	
1. Specialty by Type of Organization	Factor Analysis
2. Organization vs Specialty	Variance Analysis
3. Military vs Civilian Organizations	Variance Analysis

TABLE 5. (Continued)

Object of Measurement	Measures
C. Organization Change	
1. Reliability of Performance	Correlation Coefficients
2. At Sea - In Port Operations	Correlation Coefficients
3. Man vs Job	Correlation Coefficients
4. Prediction of Performance	Correlation Coefficients

V. RESULTS OF THE RESEARCH

The research was designed to test the primary hypothesis that "the pattern of behavior exhibited by a leader will be highly determined by the nature of the position which he occupies". This hypothesis is important because it introduces a concept of leadership which suggests useful developments both in theory and research methodology.

Prior to World War II, leadership was generally regarded as a trait of individuals. A leader was defined as a person who possessed traits and skills which enabled him to induce other people to do what he wanted them to do. The methods devised for the selection of such leaders were likely to include intelligence tests, personality tests, personal history records, and interviews. The criteria of good leadership were conceived as generally applicable to leaders in a wide variety of situations.

More recent leadership theory has sought to define leadership in terms of the structuring of interaction among the members of a social group. Although it is recognized in this theoretical approach that the leadership structure of a group is likely to be highly determined by the nature of the situation, the group task and the performance demands made upon the leader are all too often regarded as mundane or irrelevant.

The findings of research to be described in the following pages suggest that the nature of the job to be performed by a person who occupies a position of leadership is an important factor in determining his behavior in that position. These results suggest the desirability of further research to determine the possibility of isolating criteria

specific to each of a limited number of families of specialties as a foundation for the differential selection of persons for administrative and supervisory positions.

It has been further hypothesized for purposes of this research that the leadership of a group is defined, in part, in terms of a structure of organizational roles and that these roles derive their definition from the expectations of the organized group. The results of the research suggest that good morale is likely to be found in those groups of enlisted men who are aware of their status in relation to other members of their group and who know what is expected of them. Juniors and seniors are found to be closely agreed in their expectations relative to certain forms of behavior, but are in disagreement relative to their expectations for other forms of behavior. These areas of agreement and disagreement may have important consequences for the morale and effectiveness of the organized group.

It was also hypothesized that the structure of personal interactions which describes the working relationships among the members of an organization will be related to the behavior and task performance of the members of the group. The results of the research indicate that when an officer spends more of his time making inspections and working with peers, juniors and outside persons, the enlisted men under him tend to work together in their own work unit. However, when an officer spends more of his time in teaching or in interviewing personnel, the enlisted men under him tend to establish working relationships with men outside their own work unit. When an officer is described as a good leader by the enlisted men who work under him, they tend to work together in their own work unit. In units with high morale (as described by enlisted men) the members tend to work closely with their own seniors and men from other units tend to establish working relationships with members in these high morale units. The type of position occupied by an officer may determine to a considerable extent whether he will interact mostly with juniors, seniors, or peers. These results suggest that organizational role, patterns of work performance, structures of personal interactions, morale, and effectiveness are interrelated variables. An organization, for research purposes, might be regarded as a constellation of variables in interaction. It is this same constellation of variables which needs to be taken into account in a study of leadership.

1. FACTORS WITHIN ORGANIZATIONS

a. The Differentiation of Roles

(1) A Factor Analysis of Performance

This study is based on data obtained from 470 Navy officers who occupied 45 differentiated positions in 47 Navy organizations. The organizations were of twelve different types. The 470 officers were divided into 120 groups. Each group was composed of all the officers who occupy the same type of position in the same type of organization. An average score was computed for each group for each of 45 variables. An iterative method of factor analysis was employed in order to avoid the preparation of a table of intercorrelations among the 120 groups. Eight orthogonal factors were derived. These were identified as:

Factor I. Public Relations Representatives
Factor II. Professional Consultants
Factor III Personnel Administrators
Factor IV. Technical Supervisors
Factor V. Schedule-Procedure Makers
Factor VI. Maintenance Administrators
Factor VII Directors or Decision Makers
Factor VIII Coordinators

There was shown a marked tendency for similar specialties in different organizations to appear with high loadings on the same factor. With some exceptions, the factor analysis succeeded in grouping together those specialties which would be expected to exhibit similar performance characteristics. The finding that administrative performance can be described in terms of a limited number of factors and that each factor is descriptive of a distinctive pattern of performance offers considerable encouragement for the differential selection of personnel for administrative positions. This study was conducted by Stogdill, Wherry and Jaynes.(6)*

(2) Differences Between Jobs

Jaynes (2)* used an analysis of variance design in a study of matched positions in seven different types of organizations (command staffs, cruisers, destroyers, supply ships, mine ships, landing ships and submarines). Commanding officers are found to differ significantly from other officers in holding higher military rank, delegating more authority to juniors, spending more time in the preparation of procedures for carrying out plans, and spending less time with seniors and peers. Executive officers differ significantly from other officers in receiving higher sociometric scores, and in spending more time in consulting seniors, interviewing personnel and in reading and answering mail. Few consistently significant differences are found among operations officers, communications officers, gunnery officers, supply officers and engineering officers. However, greater variance is found between positions than within positions, suggesting the hypothesis that performance may be more highly determined by the nature of the position than by the nature of the man who occupies the position.

* These references are to the technical reports listed in Chapter VIII.

(3) Man vs. Job - Stogdill and Jaynes⁽⁷⁾

Twenty-two organizations were studied on two separate occasions, with approximately six months intervening between the first and second studies. These studies yielded data on three groups of subjects: (1) the same man in the same job, (2) the same man in two different jobs, and (3) two different men in the same job. Scores from the first and second studies were correlated for these three groups separately. An analysis of the results suggests that those variables that are most highly characteristic of the job, regardless of the man, are level in the organization hierarchy, military rank, sociometric score and time spent in personal contacts, consulting juniors, interviewing personnel and research. Variables which appear to be characteristic of the man, rather than the job, are Leader Behavior scores and the time spent in reading, attending conferences, public relations, preparing procedures, negotiations and supervision.

(4) Specialization at Different Echelons - Bakan⁽⁷⁾

Data are available for ten Naval organizations in which officers in the top five echelons estimated the percent of time they spend in various administrative responsibilities. An "Index of Specialization" was applied to these scores in order to obtain a measure of the extent to which an officer specializes on one or two functions. The results indicate that commanding officers are rather highly specialized, executive officers are more diversified in performance, department heads are specialized, division heads are diversified, and section heads are specialized. The findings do not support the hypotheses that administrative function becomes more specialized at each succeeding lower echelon of organization, but suggest instead an alternation of specialization of function between adjacent echelons.

b. Leadership and Role Expectations

(1) Leader Behavior and the Expectations of Followers

Stogdill, Scott and Jaynes⁽¹¹⁾ studied a Naval Air Development Command in which 183 subjects described what they do and what they ought to do on each of 45 variables. This sample included 47 seniors each of whom was described by two juniors. Seniors' descriptions of what they do are highly correlated with their self expectations. Their descriptions of what they do are more highly correlated with juniors' descriptions of what seniors do and ought to do than with juniors' descriptions of their own behavior. Seniors' self descriptions are more highly correlated with juniors' self descriptions than with juniors' self expectations. In other words juniors resemble seniors more closely in what they do than in what they think juniors ought to do. Juniors and seniors appear to be somewhat more in agreement as to what

seniors ought to do than they are in describing what seniors do. Juniors' descriptions of seniors are highly correlated with their expectations for seniors. If this may be interpreted as indicative of satisfaction with the behavior of seniors, juniors appear to be reasonably well satisfied. Juniors' descriptions of what seniors do are rather highly correlated with juniors' descriptions of their own behavior for those items which describe individual effort. They perceive less similarity between their own behavior and that of their seniors for items which describe relationships with persons. The same trend is apparent in juniors' expectations for seniors. When seniors report that they ought to have less responsibility than they describe themselves as having, they are described by their juniors as having a comparatively high degree of responsibility. Their juniors not only describe themselves as high in responsibility, but report that they as well as their seniors should have considerable responsibility. If seniors report that they do more than they ought in relation to inspection, teaching and writing reports, juniors report that both themselves and their seniors should devote comparatively small amounts of time to these performances. In general, juniors report themselves doing more in a performance when they describe their seniors as doing more than seniors say they ought, and also when they report that seniors ought to do more than seniors describe themselves doing.

(2) Perceptions of Organization - Scott⁽³⁾

In a squadron of submarines, 630 enlisted men were asked to fill in blank charts to indicate their immediate seniors, as well as their peers and juniors in their own units of organization. Those charts were compared with formal charts and personnel rosters. Discrepancies between the subjects' charts and the formal charts were classified as perceptual error. The findings indicate that the subjects err most frequently in perceiving peers, next most frequently in perceiving juniors, and least frequently in perceiving seniors. Omissions were the most frequent type of error. Peers were most frequently omitted. Persons named as juniors were frequently persons outside the subject's own unit of organization. A less frequent error consisted of the naming of a senior as a peer or junior. Total perceptual error is not highly related to ship efficiency, but is more highly related to indices of individual and unit effectiveness. In general, the higher the accuracy of perceptions of formal chart relationships of unit members, the higher the morale of the unit as reported by the members themselves and by outside observers.

(3) Reciprocation of Status Expectations - Scott⁽⁸⁾

The organization charts prepared by enlisted men, and described immediately above, were subjected to further analysis. The purpose in the present analysis was not to determine deviations from

formal charts, but to determine the extent to which any two subjects agree in their relative status to each other. If A names B as a junior on A's chart, and B names A as a senior on B's chart, their expectations for each other are said to be reciprocated. Expectations are said to be unreciprocated if A and B fail to agree as to their relative status or if one fails to name the other. Among ships as a whole the variation in subunits tends to cancel out so that for ships the range of variation is relatively small. Within most of the ships there were both high and low subunits, both departments and divisions. One ship, however, was a marked deviant in the direction of low reciprocity. This ship was ranked lowest in the squadron in efficiency and morale. If an officer who is serving as a department head is rated high in military leadership by his seniors, the petty officers in his department will tend to be high in reciprocity of their status expectations. This officer, whose petty officers' expectations are highly reciprocated, will receive relatively few leadership nominations from enlisted men. At first glance, it appears that an officer who is rated high by his superiors is rated low by enlisted personnel. If it is considered, however, that there are strong intermediate superiors (the Petty Officers) between this officer and most of the enlisted men in his unit, it can be seen that this officer receives relatively fewer leadership nominations for the reason that relatively more of them are given to the strong intermediate superiors. If the petty officers are not strong links in the chain of command, the officer receives relatively more leadership nominations from the men. He is, however, rated lower by superiors. The analytical distinction between role conflict and status confusion may be useful in organization analysis. Some of the contradictions and discrepancies between behavior and behavior expectations which are commonly attributed to role conflict may, in fact, reflect status confusion among the members of the organization. Failure of behavior to conform to expectations cannot necessarily be interpreted as indicating role conflict, as technically defined, among members. It is possible that members' role definitions may correspond, but that their definitions of status relationships do not.

c. Leadership and the Structure of Personal Interactions

(1) The Structure of Personal Interactions - Stogdill and Koehler⁽⁴⁾

Each officer interviewed was asked to name the other members of his organization with whom he spent the most time on a working basis. Twenty indices were derived to serve as measures of different aspects of interaction structure. These measures were used in all organizations studied. The study of a squadron of small ships provides data on the relation of interaction structures among juniors (enlisted men) to the interaction structures among seniors (officers). As would be expected, the officers who receive more total mentions are those who are mentioned most frequently by their own juniors. When officers

receive more total mentions, the enlisted men under them tend to give more mentions to echelons above their own and to receive more mentions from persons outside their own units. When officers receive more mentions from their peers, the enlisted men under them tend to give fewer mentions to seniors and to persons outside their units, but they receive more mentions from seniors. When officers are rated higher in military leadership by their seniors, the enlisted men under them tend to receive more total mentions and more mentions from men in echelons below their own. The same effect is observed in units with high morale. When an officer is described as a more active leader by enlisted men, his juniors tend to work together in their own unit and to receive fewer mentions from men in outside units. However, when an officer is described as a less active leader, the enlisted men under him tend to establish working relationships with men in outside units. When officers spend more time interviewing personnel, the enlisted men tend to work outside their own units; but when officers spend more time making inspections, the enlisted men tend to work together in their own units. These results suggest that the structure of working relationships among juniors is related not only to the behavior of seniors, but to the structure of interactions among seniors. Under some conditions, juniors tend to work together in their own units. However, some behaviors and interactions among seniors appear to have a disruptive effect on the interaction structures of juniors, so that they are observed to establish working relationships with men outside their own units.

(2) The Responsibility and Authority of Juniors and Seniors

The RAD scales were designed to measure different degrees of perceived responsibility, authority and delegation. In a squadron of submarines, a landing ship flotilla and in six large, stratified organizations the RAD scores of seniors were correlated with the average scores of their immediate juniors. There is observed a tendency in both large and small organizations for juniors to describe themselves as low or uncertain in responsibility when seniors describe themselves as high in authority. However, when seniors describe themselves as high in responsibility, juniors tend to describe themselves as high in authority and also, except for small organizations, in responsibility. A heightened feeling of responsibility in seniors appears to enlarge the perceived scope for action of juniors, while an increase in the authority of seniors appears to have the reverse effect on juniors. When seniors delegate more in large organizations, their juniors describe themselves as higher in responsibility, authority and delegation. However, when seniors delegate more on small ships, their juniors tend to delegate less. These results suggest that the responsibility, authority and delegation of juniors is highly conditioned by the behavior of their seniors. The findings also indicate that the structure of the organization may be an important factor in determining the responsibility and authority relationships among juniors and seniors. These data were reported by Stogdill and Scott.⁽⁷⁾

d. Leadership and Organization Effectiveness

(1) Organization Effectiveness

The value of a leader is usually estimated in terms of the effectiveness of the organization which he leads. Naval ships are inspected periodically to determine their readiness for carrying out their assigned missions. Each ship is given an operational readiness score which might be regarded as an index of organization effectiveness. Stogdill⁽⁷⁾ correlated the operational readiness scores of ships with the RAD scores and leader behavior scores of the commanding officers, executive officers and department heads of those ships. In general, operational readiness was more highly correlated with the scores of the commanding officer than with those of the executive officer or department heads. The results suggest that the commanding officer is the key officer in determining the effectiveness of the ship which he commands. One exception to this trend was noted. It was found that operational readiness was negatively correlated with representing behavior (speaking and acting in behalf of the group) on the part of the commanding officer and executive officer, but was positively correlated with this behavior on the part of department heads. This finding suggests that ships are likely to be more effective when officers closer to the enlisted men speak and act in their behalf. It was found by Campbell⁽⁵⁾, in a squadron of submarines, that ratings of ship effectiveness by command staff personnel are positively correlated with torpedo accuracy firing scores and with quarterly training report evaluations. Other measures found to be related to ship effectiveness were number of personnel aboard ship, reenlistment rates among enlisted men, lack of disciplinary offenses, and strictness of discipline for personnel coming before the mast. Officers who command ships that are rated high in effectiveness and/or morale tend to be regarded as better leaders by the enlisted men serving on those ships as well as by squadron command staff personnel. The results of these studies suggest that the effectiveness of an organization is related not only to the quality of its leadership, but also to the morale of its members in general.

(2) Leader Effectiveness

Campbell⁽⁵⁾ found that among submarine officers current fitness report scores are correlated with military rank and with nominations for leadership by enlisted men. Past fitness report scores are correlated with "conduct" scores in Naval Academy and with nominations for leadership by enlisted men. However, present fitness report scores tend to be correlated negatively with past fitness report scores, Naval Academy standing scores, and present ratings for military leadership by seniors. When an intermediate echelon of officers is rated for leadership by senior officers and by enlisted personnel, the two groups are in fairly close agreement. Stogdill, Scott and Jaynes⁽⁶⁾ found in the study of a Naval air development staff that five factors were required

to account for the intercorrelations among twelve criterion variables. The first factor, with highest loadings on military rank, level in organization, sociometric score and leadership rating by seniors, was identified as "status in the organization". The second factor, with highest loadings on ratings of responsibility and authority by juniors, was identified as "responsibility". The third factor, with high loadings on leader behavior descriptions of seniors by juniors, was identified as "effective interpersonal relations". The fourth factor, with high loadings only on juniors' descriptions of seniors' delegation and leader behavior, was identified as "the maintenance of an integrated work group". These results suggest that such factors as organization structure and status, job tenure, level of responsibility, interpersonal relations, and work group structure and performance must be taken into account in describing and evaluating leadership.

2. DIFFERENCES BETWEEN ORGANIZATIONS

a. Differences Between Navy Organizations - Jaynes(2)

In the analysis of variance design discussed under section 1. a. (1) of this chapter, a test was made to determine differences between submarines and landing ships (LST), as well as between seven diverse types of organizations. Only five variables (sociometric score, level of authority, communicative behavior, and per cent of time spent in observation and in consultation with peers) were found to differentiate significantly between submarines and landing ships. Among diverse organizations (command staffs, cruisers, destroyers, submarines, supply ships, mine ships and LSTs) the officers on command staffs differed in holding higher military rank, in spending more time in consultation with outside persons, and in spending less time in teaching. Few significant differences were found among the various types of ships.

b. Differences Between Navy and Civilian Organizations

Fleishman⁽⁷⁾ used an analysis of variance design to test for differences between four naval and four business organizations. The naval organizations were represented by a district command staff, a training station, a naval air station and a naval bureau. The business organizations were represented by a rubber tire manufacturing plant and three agricultural cooperative associations. A greater number of significant differences was found between different naval organizations and between different business organizations than between combined naval organizations and combined business organizations. The variables that differentiated significantly between business and industrial organizations were level in organization hierarchy, responsibility self rating, delegation self rating, sociometric score and amount of time spent in the

following performances: total time spent in work with persons, consulting outside persons, consulting juniors, examining reports, reading and answering mail, and coordination. Stogdill, Wherry and Jaynes⁽⁶⁾ in their factor analysis of the intercorrelations among 120 groups of officers who occupy similar positions in similar types of organizations, found a few profiles of factor loadings which appear to be descriptive of specific types of organizations. When the factor profiles for a specific type of organization were plotted, not more than five or six clusters of factor profiles were found, even in the largest of the organizations. Greater differences were found between specialties than between organizations.

3. ORGANIZATION CHANGE

a. Measures of Organization Change - Stogdill and Koehler⁽⁴⁾

It has been shown that a sociometric chart can be superimposed on an organization chart to indicate the structure of working relationship in an organization. When successive studies of an organization are made, such charts can be drawn at intervals. Comparison of two such charts for one organization which was studied twice with six months intervening, showed that division heads under one commanding officer were bypassing their department heads and department heads were bypassing the executive officer in order to work directly with the commanding officer. This commanding officer rated himself high in responsibility, but his junior officers at each succeeding echelon below his own rated themselves lower in responsibility. Under a different commanding officer six months later, these officers were shown on the sociometric chart to work directly with their department heads who, in turn, worked with the executive officer or with their own juniors. In this situation, the junior officers were found to rate themselves higher in responsibility than the commanding officer, suggesting that they had more freedom for making and carrying out decisions than was possible under their previous commanding officer who worked with them closely on a face-to-face basis and made many of their decisions for them. For theoretical purposes, an organization can be conceived as a constellation of variables in interaction. A table of intercorrelations among measures of organization structure and status, personal performance and personal interaction, might be regarded as a miniature system representative of such a constellation of variables. Separate intercorrelations of measures taken at two different times or under different operating conditions might be used as a basis for estimating organization change. Analyses by Stogdill and Koehler⁽⁴⁾ of data from a ship under operations at sea and under operations in port reveal different clusters of significantly intercorrelated variables which are descriptive of these two operating conditions. However, the most impressive result of these analyses is the finding that both operative and formal organization is

characterized by a high degree of stability which persists under different conditions. It is this stability which gives permanence to organization and predictability to the performance and behavior of the members of the organization. These results lend further support to the reports by Jaynes⁽²⁾ and Fleishman⁽⁷⁾ that fewer significant differences are found between organizations than between the positions in their organizations.

4. THE PREDICTION OF LEADER BEHAVIOR

a. Prediction of Navy Officer Performance

Stogdill, Coons, Scott and Jaynes⁽⁹⁾ conducted a study designed to predict the behavior of Navy officers being transferred to new positions. A field worker studied twenty officers about to be transferred. Another field worker studied the officers who were to be replaced by the "transferees" (officers being transferred). The officers being replaced were designated as "Occupants" of the positions to which the transferees were to be assigned. Measures were obtained on 43 variables. The data obtained from both the transferees and occupants were employed by six Navy officers and eleven members of the Ohio State Leadership studies staff for predicting the future behavior of the transferees. Predictions were recorded for each item of behavior for each transferee. Six months later each transferee was studied in his new position. It was found that when predicting for individual items of behavior, the average correlation between the predictors' scores and the follow-up scores was .27. The predictors' scores were more highly correlated with the scores of the transferees and occupants than with the follow-up scores. Predictions were somewhat more accurate for those items of behavior on which the predictions were more highly correlated with the scores of the occupants than with those of the transferees. The transferees tended to act in their new jobs more like they acted in their previous jobs in their interactions with other persons. They tended to act in their new jobs more like the previous occupants of those jobs in those forms of work which involved individual effort. When predicting for the total behavior of the transferees, the predictions were most successful for those officers being transferred to the position of commanding officer. Predictions were least successful for officers being transferred to technical positions aboard ship. The predictors' scores were somewhat more highly predictive of future performance than were the past performance scores of the transferees. This study is of significance in indicating that individual items of behavior can be predicted with a moderate degree of success and that the past performance of the individual and the demands of the job must be given differential weights in predicting different kinds of performance.

Discussion

It has been possible in the brief abstracts presented above to describe only the highlights of research design, methodology and findings. The total integration of the research could not be indicated in these abstracts, but some integration was suggested by the occasional cross references to different studies.

Various studies yield data relative to factors which determine performance. These data suggest that the nature of the job occupied by an individual is a more potent factor in determining his performance than is his personal pattern of behavior or the nature of the organization in which his job is located. This finding suggests the possibility of improving personnel selection and assignment by developing methods and criteria which are specific to different job families.

The finding that organizations are characterized by underlying factors of a profound degree of stability and that organizations which differ widely in character show more similarities than differences in their operational and performance characteristics, suggests the need for a marked revision of a number of preconceptions about the nature of organization. It is suggested in particular that much of the current literature on democracy, authoritarianism, and bureaucracy in organizations needs to be reexamined with a view toward removing that which represents unsound preconception and bias and with the further aim of reconstructing concepts and theories on the basis of research findings.

The results of this research suggest that even small organizations are very complex in structure and can be adequately described only in terms of a number of dimensions. The engineer's emphasis on horizontal differentiation and the social scientist's preoccupation with vertical power structures represent gross distortions and oversimplifications of the problems of organization. The necessity for taking both of these factors into account is of more than theoretical significance. The concepts of organization held by business men, government officials and social scientists make a deep and far reaching impact on the development of organizations at all levels of complexity in our society.

This research represents only a beginning in the empirical investigation of a field of knowledge which has previously been visualized only in theoretical terms. It would be unwise to generalize far beyond the sample of organizations studied in this research. Rather, the research should be extended to a wide variety of organizations in order to determine which factors are common to organized groups in general and which are specific to various types of organizations.

VI. APPLICATIONS

The information and methods developed by this project should have practical utility in the areas of (1) personnel selection, (2) evaluation of persons, organizations or units of organization, (3) organization analysis, (4) administrative practice and (5) training. These are not independent areas. It is the opinion of the writers that any remedial action designed to effect improvements in any one of these areas should be based on an integrated analysis of all the areas.

As a matter of convenience, the different areas of application will be discussed separately.

1. PERSONNEL SELECTION

The results of this research have shown that performance in a particular type of administrative, executive, supervisory, or staff position is likely to be determined to a high degree by the duties and expectations attached to the position and by its status in the organization structure. Some jobs involve a high degree of individual effort. Others require a high degree of personal interaction. Some require interaction primarily with seniors or peers. Others demand a high degree of interaction with juniors. Staff positions are likely to involve considerable interaction with seniors, while supervisory positions usually involve more interactions with juniors.

The finding that the nature of the job is a potent factor in determining performance does not in any way invalidate the well established fact that individuals differ. Some behaviors appear to be carried by the man from one job to another. Data derived from the Leader Behavior Scales and from the Sociometric Indices suggest that some persons tend to identify themselves and to interact primarily with seniors, while others tend to identify themselves and to interact mostly with juniors. The findings further indicate that those who interact on a more harmonious basis with juniors are likely to be regarded as better leaders by both juniors and seniors.

The factorial study of 120 groups of persons in different specialties indicates that there are not an infinite number of patterns of performance represented in these specialties. A large portion of the variance among the specialties was accounted for by eight orthogonal factors. These findings suggest the feasibility of establishing differential performance requirements and criteria for a limited number of families of positions. It is suggested, therefore, that job analysis, organization analysis, performance analysis, and personnel testing be combined when it is desired to develop an effective personnel selection program. It seems reasonable to believe that selection and placement based on a consideration of formal organization structure, personal interaction

structures in the organization, the performance and interaction demands of the job to be filled and the location of the job in the organization, in conjunction with a consideration of the characteristic performance and interaction patterns of the applicants for the job, should result in more effective placement. It might be argued that this is an expensive procedure. It might also be argued that the current practice of carrying out job analyses and organization analyses when special problems arise or independently of the selection program is still more costly.

2. EVALUATION

The results of the research indicate that officer fitness report ratings are not highly correlated with other leadership criteria developed by this project. Whereas the distribution of fitness report ratings tends to be highly skewed toward the maximum score, ratings made for research purposes show an almost normal distribution about the midpoint of the rating scale. It is apparent that the factors involved in rating personnel for research purposes differ very markedly from those involved when the future careers of the officers being rated are at stake.

The scale developed by this project for obtaining ratings on "military leadership" is a useful type of device when it is desired to reduce skewness toward the high end of the scale. This scale requires a senior to list his juniors in order of merit (the rank order rating system) and at the same time to rate each junior on a four point rating scale ranging from "Excellent" to "Poor". This system has the same weakness found in most rating schemes. For example, it can not be assumed that a man who is rated as "excellent" and ranked as "best leader" in one group is equal in merit to a man who is rated as "excellent" and ranked as "best leader" in some other group. The problem is magnified when different seniors are required to rate varying numbers of juniors.

It is believed that a system which involves the rating of a man against his own performance might have considerable usefulness for the selection of men for special assignments. The following sample rating scale is shown in order to illustrate the proposed system. The same system could be extended to a wide variety of items including descriptions of behavior in terms of other than frequency of performance or per cent of time involved.

The proposed system includes a description of his own performance by the person reported on, a rank ordering of the items of performance (from those in which most competence is shown to those in which least competence is shown) by the reporting officer, and a rating by the reporting officer of the degree of competence shown by the subject in terms of other officers of his own rank and assignment.

Such a rating system should provide a basis for matching an officer's pattern of performance and level of competence to the requirements of the job(s) for which he is being considered.

The present research also employed the rank ordering of units of organization in order to obtain ratings of the effectiveness of units in carrying out their assigned missions. These ratings appear to have considerable utility as leadership criteria. The ratings obtained as a result of the Navy's periodical operational readiness inspections also appear to merit further use as criterion measures in leadership studies and performance evaluation.

The procedure for the proposal rating form follows:

Performance Record

Instructions to officer being reported on: In column (1) below record after each item the percentage of your time spent in the performance described.

Instructions to reporting officer: In column (2) below rank the items in order of merit from 1 to 14 to indicate the relative degree of competence shown by the officer reported on in the performance of the items of work described. A rank order of 1 indicates that the officer is more competent or skilled in the item of work described than in the other items in the list. A rank order of 14 indicates that the officer is least skilled in the item of work described.

Also, after each item, enter in column (3) below one of the letters: A, B, C, D, E or F to indicate the relative skill or competence of the officer in comparison with all other officers of the same rank, classification and corps who are known to you personally.

A indicates that he is in the top 10 per cent.
B indicates that he is in the next 20 per cent.
C indicates that he is in the next 40 per cent.
D indicates that he is in the next 20 per cent.
E indicates that he is in the bottom 10 per cent.
F indicates that you have not observed his performance.

<u>ITEMS OF PERFORMANCE</u>	<u>(1) % Time</u>	<u>(2) Order of skill</u>	<u>(3) Comparison with others</u>
1. Inspection (Observation to determine conditions)			
2. Research (Gathering and preparing data)			
3. Planning (Short term and long range planning)			

<u>ITEMS OF PERFORMANCE</u>	<u>(1) % Time</u>	<u>(2) Order of skill</u>	<u>(3) Comparison with others</u>
4. Preparation of procedures (Outlining methods for operating plans)			
5. Coordination (Integration of activities for purposes of efficiency, economy, and control of operations)			
6. Evaluation (Evaluation of correspondence, reports, information, decisions, performance, results)			
7. Interpretation (Clarifying and explaining)			
8. Supervision (Seeing that work gets done)			
9. Personnel activities (Selection, discipline, training, motivation of personnel)			
10. Public relations (Selling organization to the public)			
11. Professional consultation (Giving technical advice)			
12. Technical and professional performances (Teaching, medical practice, operating equipment, etc.)			
13. Negotiations (Purchasing, selling, negotiating agreements, settling claims, etc.)			
14. Scheduling, routing and dispatching (Determining the time, place and sequence of operations)			

100%

3. ORGANIZATION ANALYSIS

The present research has shown that patterns of performance and structures of working interactions do not always correspond closely with the specifications of formal organization. Such a finding does not necessarily indicate a condition that is in need of correction. Operative organization must change in order to cope with changing tasks and conditions. In cases where repeated studies indicate marked differences between formal and operative organization, it might be well to consider the advisability of revising the formal structure in order to conform more closely with the performance patterns and interaction structures that have developed through continued operations.

The sociometric methods, the RAD Scales and the Per Cent of Time Forms, used in conjunction with organization charts and manuals, appear to be useful for a comparative study of formal and operative organization. The report by Stogdill and Kochler⁽⁴⁾ has shown how these methods can be used for purposes of organization analysis.

Scott's⁽³⁾ study of enlisted men in submarines indicated that morale was better in those units in which organization structure was perceived most accurately. These results suggest the desirability, not only of informing members regarding the duties they are expected to carry out, but also regarding the identity of the persons whom they are to regard as junior and senior to themselves. Members formulate their own performance expectations to some extent in terms of what they observe their seniors and juniors to be doing and in terms of what is expected of these persons. None of the results of the research indicate that members do better or exhibit better morale when they are kept in the dark about their status or about what is expected of them. If organization analysis is to be effective, it would seem desirable to extend it to the lowest echelons in the organization, and that each member should be given the information necessary for arriving at a correct definition of his own duties as well as of his relationships with seniors, peers and juniors.

The finding that the specialization of performance alternates between adjacent echelons in the vertical scale of organization suggests the desirability of repeating and extending research designed to determine the presence of this effect in civilian organizations. If it is found to be present, the information should be of considerable usefulness in the assignment of duties and functions to personnel in different echelons.

The finding that performance is highly determined by the nature of the job has important implications for organization effectiveness. If a new man is being sought to improve the effectiveness of an organization or one of its subdivisions, he would appear to be at least half defeated at the start if he is set down in the same position with which his predecessor was unable to cope. If it is desired to maximize

his chances of success, it would seem highly desirable to change the nature of his job to a substantial degree. The job might be moved up or down in echelon status. Subdivisions under the job might be added or removed. Duties attached to the job might be added or taken away. Any changes made should involve changes in the performance patterns and interaction structures of subordinates in order that the new man will not have to contend with the dead weight of organizational rigidity and operational routine.

4. ADMINISTRATIVE PRACTICE

Various studies in this research have shown that those seniors who delegate more authority are regarded as better leaders, especially by juniors. When seniors delegate more, there is a tendency for the delegation process to continue down successive echelons among commissioned officers. However, in small ships, there is a tendency for the process to stop at the echelon that has direct supervision of the performance of enlisted men. There is also a tendency for seniors to delegate less when their juniors are new to their jobs or are untrained.

The finding that "good" leadership and the delegation of authority are closely related has considerable practical significance for administrative practice. One of the functions of effective administrative leadership would appear to be that of providing juniors with sufficient freedom of decision and action that they can carry out their duties in an unhampered manner. This conception of effective leadership is contrary to the once popular view that it is the function of leadership to obtain the maximum performance from followers who, by their inherent nature, will respond satisfactorily only under pressure, continued motivation or fear of punishment. The Navy officers who obtained the highest ratings on various criteria of good leadership expressed the opinion that the best way to obtain satisfactory performance from juniors is to provide them with a general statement of policy or of what is desired and let them employ their own methods in carrying out their tasks.

In formally stratified organizations, the results suggest that, in general, morale and organizational integration are better maintained when seniors provide juniors with freedom for decision and action, and inspect on an impersonal basis to see that the work is being properly done.

5. TRAINING

The present research was not designed to investigate training problems. However, all the findings relative to organization effectiveness and "good" leadership might be used as materials for textbooks and training courses on leadership and organization. The point of view that leadership and organizational performance and structure represent integral, rather than separate, dimensions of expectations, performance and interaction should prove helpful in analyzing problems of organization.

The finding that some behaviors are typically characteristic of the man, while others are highly determined by the job, should be of value in training men for various specialties. When men are to be trained for a particular professional specialty, it would seem desirable to give them training and practice in the administrative performances and skills which will be required.

In military organizations, it would seem especially important to give young trainees adequate training in the effective organization and dispatch of paper work. Military men spend much of their time on paper work, not because of their love of bureaucratic procedures, but because systematic reports are required in order to account for their actions to the public and in order to provide a basis for efficient military administration. Since paper work is necessary, and since Navy officers state that it uses up much of the time they should be spending on leadership, organization and morale, it would seem desirable to train young officers in the best available methods for discharging this chore in a rapid and efficient manner.

VII. DISCUSSION

This project has carried out a complex research design with a small staff. The research is based on a study of 909 Navy officers in 76 Navy organizations. Enlisted men and civilian personnel also participated in the research.

The project has made some contribution to the development of new research designs. The project as a whole was designed to test a miniature theoretical system which is not regarded as representing a complete theory of leadership or of organization. Sub-designs within this system which may lay some claim to originality are the following:

1. Job vs Organization as Sources of Behavior Variance
2. Personal vs Organizational Determinants of Behavior

3. Expectations (Does vs Ought)
4. Perceptions of Organization vs Organization Charts
5. Prediction Based on Both Transferee and Occupant

Contributions have also been made toward the development of new methods for the study of leadership and organization. The most extensively tested of these methods are:

1. The forms for analyzing and describing administrative performance (The Per Cent of Time Forms)
2. The RAD Scales
3. The Sociometric Indices and the superimposition of Sociometric Charts upon Organization Charts.

Among the new findings developed by the research are the following:

1. Performance is more highly determined by the nature of the job than by the nature of the organization in which the job is located.
2. Specific items of behavior can be predicted as well from the behavior of the previous occupant of a job as from the past behavior of a new man transferred into the same job.
3. Interpersonal forms of behavior were predicted somewhat more successfully than various forms of individual effort.
4. The variance represented among a large number of specialties can be accounted for to a very large extent by a limited number of factors.
5. The degree of specialization exhibited by immediate juniors and seniors alternates between adjacent echelons.
6. Degree of responsibility and authority in seniors exerts different effects on juniors.
7. The extent to which seniors delegate authority exerts different effects upon the delegation of juniors in large and small organizations.
8. When seniors spend more time in observation and inspections (as opposed to personnel interviewing and teaching) their juniors tend to work together in their own units of organization rather than to establish working relationships with persons in other units.

9. Morale is higher in those units of organization in which the members have a clearer perception of the status of their immediate juniors, seniors and peers.
10. Juniors resemble their immediate seniors more closely in what they do than in what they think they (juniors) ought to do.

Some hypotheses advanced at the beginning of the research have received increasing substantiation as the studies have progressed. Other hypotheses and concepts have undergone successive revisions. A number of questions have been raised which are in need of further investigation. This project represents only a beginning toward a type of research which should be extended to include the study of a wide variety of organizations.

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33. Bentz, V. J., "The Study of Similarities and Differences in the Attitudes of Supervisors and Workers Towards the Criterion of Job Success and Other Factors Related Thereto". Columbus: Ohio State University Library, 1948.
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39. Report No. 3, Progress during the Period July 1, 1947 to December 1, 1947.
40. Report No. 4, Progress during the Period December 1, 1947 to March 1, 1948.
41. Report No. 5, Status during the Period March 1, 1948 to June 1, 1948.
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55. Report No. 16, Status during the Period May 15, 1952 to August 15, 1952.
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IX. PROJECT PERSONNEL

The project has provided research training and work experience for 31 graduate students. The following persons have worked on the project during the period June 1, 1946 to August 31, 1953.

NAME AND TITLE	STATUS	PERIOD	
Carroll L. Shartle, Director	OSU Funds	June	1946 - August 1953
Ralph M. Stogdill, Assoc. Director	FT	July	1946 - August 1953
David Bakan, Research Consultant	FT	July	1950 - Sept. 1950
Jack Belzer, Research Consultant	PT		
Donald T. Campbell, Research Consultant	PT	April	1948 - Sept. 1952
Robert J. Wherry, Research Consultant	PT	April	1951 - Aug. 1953
C. G. Browne, Research Associate	FT - (s)	July	1948 - Oct. 1948
Alvin E. Coons, Research Associate	FT	July	1950 - Aug. 1950
Charles F. Elton, Research Associate	FT - (s)	Sept.	1949 - Dec. 1949
Ellis L. Scott, Research Associate	FT - (s)	Dec.	1950 - Aug. 1953
H. B. Bahrick, Research Assistant	PT - (s)	Feb.	1949 - March 1949
Joel T. Campbell, Research Assistant	PT - (s)	Oct.	1948 - Dec. 1948
Ralph R. Canter, Jr., Research Assistant	PT - (s)	April	1948 - May 1948
Don DeVore, Research Assistant	PT	Jan.	1952 - April 1952
Virginia Dimmett, Research Assistant	PT - (s)	Jan.	1952 - May 1952
Edwin A. Fleishman, Research Assistant	PT - (s)	Jan.	1950 - Aug. 1950
Margaret Halseman, Research Assistant	PT - (s)	Summers	1950, 1951, 1952
Joan Householder, Research Assistant	PT - (s)	Nov.	1951 - Jan. 1952
Robert Hites, Research Assistant	PT - (s)	March	1949 - March 1949
William Jaynes, Research Assistant	PT - (s)	Sept.	1949 - Aug. 1953

NAME AND TITLE	STATUS		PERIOD	
Donald Kuhn, Research Assistant	FT - (s)	Nov.	1950 - Jan.	1951
Eulem Perloff, Research Assistant	PT - (s)	Oct.	1948 - Dec.	1948
Robert Perloff, Research Assistant	PT - (s)	Oct.	1948 - Dec.	1948
S. A. Weinberg, Research Assistant	PT - (s)	April	1950 - Sept.	1950
Mary Dougan, Secretary	FT	June	1953 - Aug.	1953
Kathleen Koehler, Secretary	PT - (s)	Aug.	1946 - March	1952
Dolores Shira, Secretary	FT	June	1952 - June	1953
Elizabeth Brooks, Clerical Assistant	PT	Jan.	1951 - May	1951
James Clark, Clerical Assistant	PT - (s)	Aug.	1949 - Sept.	1949
William E. Crates, Clerical Assistant	PT - (s)	July	1950 - July	1950
Dorothca Dietz, Clerical Assistant	PT - (s)	Feb.	1950 - April	1950
Rosalyn Edelsberg, Clerical Assistant	PT - (s)	Nov.	1950 - Nov.	1950
Marshall Ensminger, Clerical Assistant	PT - (s)	Jan.	1950 - Jan.	1950
Maryanne George, Clerical Assistant	FT	May	1952 - June	1952
Walter Gnezda, Clerical Assistant	PT - (s)	April	1950 - May	1950
Emma L. Grandison, Clerical Assistant	PT - (s)	Dec.	1951 - Feb.	1952
Persis Haas, Clerical Assistant	PT - (s)	April	1949 - May	1949
Margery A. Koehler, Clerical Assistant	PT - (s)	June	1951 - Aug.	1951
Leila Melick, Clerical Assistant	PT - (s)	Aug.	1950 - Dec.	1950
James Moore, Clerical Assistant	PT - (s)	March	1950 - March	1950
Robert Morrison, Clerical Assistant	PT - (s)	Jan.	1950 - Jan.	1950
Nancy Richmond, Clerical Assistant	PT	Aug.	1952 - Nov.	1952
Joseph Yurasek, Clerical Assistant	PT - (s)	Feb.	1950 - June	1950

FT = Full Time

PT = Part Time

s = Student

X. MANUAL OF METHODS

The methods developed for the Studies in Naval Leadership constitute an integrated battery of research procedures. They should be used with caution as separate devices for practical application, since some of the forms need to be lengthened in order to increase their reliability.

Only the most recent revision of each method or form is presented in this manual.

The methods are discussed under the following headings:

- A. The interview
- B. Sociometric Methods
- C. Organization Charts and Manuals
- D. The RAD Scales
- E. Work Analysis Forms
- F. Leader Behavior Descriptions
- G. Effectiveness Ratings
- H. Cautions

A. THE INTERVIEW

The interview designed for the Naval Leadership Studies is a structured, free-response type of interview. This means that the interview is designed to elicit information about specific topics, but that questions have been phrased so as to permit the interviewee to respond in his own terms.

The questions retained in the present form of the interview are those which have proved most useful in a study of both military and business organizations. There is nothing sacred about these questions. If the interviewee does not understand a question, it should be altered and restated, retaining its essential meaning, until it is interpreted correctly.

Before entering into the interview proper, it is desirable to give the interviewee a brief explanation of the purpose and nature of the study in which he is participating. The following example suggests a possible approach. However, the interviewer should adapt his explanation to fit the situation.

Example of Explanation to Interviewee

"The Personnel Research Board of the Ohio State University is conducting studies of leadership and executive performance in business, industry, education, and the armed services. The present studies are being conducted under contract with the Office of Naval Research. It is the purpose of these studies to devise methods which will be useful for the selection, assignment and transfer of persons in administrative (or executive) positions. The studies are experimental, and have no official connection whatsoever with the Office of Naval Research. They are being conducted entirely by the staff of the Ohio State University Personnel Research Board. These studies are designed to find out what administrators do and how they do their jobs; not how well they do their jobs. We are interested in making a job analysis of work performance, work methods and organizational operations. In order to accomplish this it is necessary only to describe accurately what is done, how it is done and who does it. The report which we will submit to the Navy will not contain any information or data which will identify any individual. The research data we collect here will be taken to Columbus, coded and punched on IBM cards. Our report will show only average scores and correlation coefficients, based on the data obtained for all members who participate in this study. For this reason, our report will be of no value to the Navy in evaluating the personnel who are cooperating with us in this study. This research is aimed at devising methods for future use, not for present utility."

Mechanics of the Interview

It has not been found necessary to request, or emphasize the necessity of, frankness in these interviews.

After introductions have been completed, explanations of the studies made, and questions answered to the satisfaction of the interviewee, it is time to enter into the interview proper.

The interviewer places the interview form on his desk in plain sight of the interviewee. He writes on this form in full view of the interviewee, and makes no attempt to conceal anything he records.

The Interview

Date

The interviewer begins by filling in the date of the interview on the first page of the interview form.

Name

Record the full name and professional title (e.g. Capt., Dr., Rev., Prof., etc.) of the interviewee

Job Titles

Record the official title (or titles) of the interviewee. In case the interviewee occupies more than one position, record the title of each. (For example, in Naval organizations, an officer may occupy the positions of Personnel Officer, Disciplinary Officer, and Recreation Officer).

Units in Charge of

Record the names of all the units (Departments, Divisions, Sections, etc.) headed by the interviewee. If he is not the head of any organizational unit record "none". The Commanding Officer or President heads the entire organization, so it is not necessary to list divisions.

Units in Which You Are a Member

Record the names of all the units (Departments, Divisions, Sections, etc.) in which the interviewee exercises official responsibilities, or is responsible for the performance of duties. For example, an officer may hold the position of Purchasing Officer in the Supply Department, but he may also be assigned on a part time basis to the Records Section of the Accounting Department.

How Long Attached to this Establishment - (Number of Months)

How Long in Present Position - (Record in Months)

Naval Schools Attended

If Naval Academy is not mentioned, inquire specifically.

Numbered Interview Sections

1. Mission (objectives and functions) of own unit/s.

a. Definitions:

The mission of an organization (or unit of organization) is defined in terms of the major general tasks it is expected to perform. The mission or general task of a given organization or unit is likely to remain more or less constant (e.g., to train personnel, to manufacture automobiles, etc.). The mission of an organization can usually be broken down into specific objectives which may change from time to time according to requirements of changing situations. For example, the specific objective of a training school today may be the training of a large number of cooks and bakers. Next month it may have the specific objective of training an increased number of radio operators. The characteristic tasks of an organization (e.g. what it ordinarily does) are known as its functions.

Own unit may be the entire organization or a department, or division, section, etc. The following questions are designed to determine the major purpose of an organization or unit of organization.

b. Questions:

In a military organization, the following question will usually elicit the desired information.

What is the mission of your (department, organization, division, section, unit, etc.)?

In a non-military organization, the following question will serve the same purpose.

What is the primary purpose of your (department, division, section, unit or organization, etc.)?

If the interviewee is not in charge of any unit (department, division, etc.), but is responsible only for his individual performance, the following question may be asked.

What are the major duties or functions of your position?

2. Background and history (origin, reorganization, trend in size, major difficulties, plans for improvement) of own unit/s.

The amount of information that can be elicited relative to the history of the organization or unit will probably depend to a considerable degree upon the length of time the interviewee has been a member of the organization. It may also depend upon his position--whether or not he has access to the information. For these reasons it is not necessary to press for information on these questions, but all questions should be asked.

Questions:

a. Origin. "Do you know when this (establishment, station, school, company, plant, department, division, etc.) was organized? When was it started?"

b. Reorganization. "Has it undergone any major reorganizations since that time?"

If so, "What was the nature of the most recent of these reorganizations?"

c. Trend in Size. "What is the present trend in size and operations of the (organization, division, etc.)? Is it expanding, retracting or leveling off? How do you explain this trend?"

d. Major Difficulties. "Could you list some of the major difficulties confronting your (organization, department, etc.) at the present time?" (If the answer is "lack of money or personnel", ask if there are any others.)

e. Plans for Solution. "What plans do you have for solving the difficulties?"

f. Administrative Changes. "What administrative changes have you made in order to accomodate your personal way of doing things and in order to get the job done the way you feel it should be done?"

3. Work of the Executive

It is the purpose of this analysis to obtain, in an interviewee's own words, a breakdown of his work in each position he occupies. No attempt is made to have the interviewee use the items listed in the form for estimating "Time Spent in Major Responsibilities". The emphasis is on what the interviewee actually does, as he sees his own work.

Definition - A position is any officially designated job which is represented by an official title and a specified box on the organization chart.

Questions:

If the interviewee occupies more than one position ask, "What per cent of time do you spend in each of your positions-- what per cent in your position as _____ and what per cent in your position as _____?"

If only one position is occupied ask, "What are the major duties of your position. By this I mean, how do you spend your working time? Try to think of your work on the average so as to rule out the influence of non-typical days."

The same questions can also be phrased as follows: "On the average, how do you spend your working day?" The same information should be obtained in relation to each position.

Boards and Committees:

Ask the interviewee to name all of the boards and committees (which are not of a confidential nature) of which he is a member. Determine the percentage of time spent in each and the work performed in each by the interviewee.

4. Organization Chart (for each unit supervised) Showing:
(a) person to whom you report and (b) persons who report
to you.

Draw, or have the interviewee draw, an organization chart which shows his position, the position above his own, and the major positions under his direction. A chart should be drawn for each position occupied, and the relationship of these positions to each other and to the higher positions of the organization should be shown.

If the interviewee has no idea of organization, the information can be obtained by asking him, "Who is your superior officer? or "Who is the person who has authority to supervise your work? What other persons work for your superior and hold the same relation to him that you do? How many people work directly under your supervision, so that you are the one who has authority to tell them what to do? What are their names, what are their titles, what does each one of them do? Who works under each of these persons? What are their names, what do they do, etc.? How many people in all work under you?"

5. Persons Dealt With (in order of length of time)

It is the purpose of this section of the interview to obtain a list of those persons with whom the interviewee spends the most time on a working basis. It has been found that most persons in administrative positions spend more time with their immediate assistants and subordinates than with other persons. For this reason it appears desirable to obtain first a list, in rank order, of the assistants with whom the interviewee spends the most time. Assistants may include both military and civilian personnel in a military organization. Assistants may also include secretaries, stenographers and clerical help as well as administrative help. Unless the interviewee has only one, two or three assistants, an attempt should be made to have him name at least four or five persons.

After a list of assistants has been obtained the interviewer proceeds to obtain a list of other persons in the organization with whom the interviewee spends time on a working basis. It should be carefully emphasized and explained that this list is to include all persons in the entire organization who are not working directly under the interviewee. This includes persons who are in the same department in which he is located but who are not working under him, as well as persons in departments other than the one in which he is located.

Questions:

"I am wondering if you could list the names of your assistants with whom you spend the most time in getting work done. Think back over the past several weeks, consider all the persons who are working under you. With which one of these assistants have you spent

the most time on a business basis? With which one have you spent the next most time? Who next? Who next? etc. What is the general kind of business you conduct with each of the persons you have named above?"

After a list of at least five or six assistants has been obtained the interviewer attempts to obtain a similar list of working partners who are not the interviewee's assistants or direct subordinates.

NOTE: Commanding Officers, Executive Officers and presidents of companies are not asked the following question.

Questions:

"Now, let's consider everybody in the entire (organization, school, company, etc.) who are not working under your supervision. This means that you want to consider not only the top officials but also all the members of other departments as well as the members of the (_____ department) who are not working under you. It means people who have higher level positions than you; people the same level as you; and those who occupy lesser positions than yours. Considering all of these people who are not your assistants, with whom do you spend the most time in getting work done? Who is next? Who is next? etc." Try to get more than five names.

After these two lists have been completed, the interviewer then requests that all of the names in the two lists be arranged in rank order by the interviewee according to the amount of time he spends with them. It may be necessary to hand the interviewee the list of names so he will have them before him. He is asked, 'Consider all of the names in the two lists. With whom do you spend the next most time? Rank them in order from most to least'. The interviewer puts a (1) before the first, a (2) before the name of the second, etc.

6. Methods of Getting Best Work out of Assistants

The interviewee is asked "What do you believe are the best methods for getting your assistants to do a good job for you?".

7. Qualifications for this Position as the Incumbent sees it.
(Training, experience and general qualifications):

The interviewee is asked, "If you were writing a set of qualifications for persons who are to fill a position similar to yours, what would you require in the way of training, experience, and other general qualifications?".

Forms to Be Filled Out by Interviewee

If there are forms to be filled out by the interviewee, present them at this time. If both interviewer and interviewees have time, the forms may be filled out while the interviewer is at hand to answer questions. If forms must be left, explain directions and mechanics of each set of forms until certain that interviewee understands clearly how to complete them. Agree upon a date and time for collecting them.

Thank the interviewee for his participation in the research.
Answer any questions he may wish to ask.

Ohio State University
Personnel Research Board
Leadership Studies

Date _____

Name _____

Titles _____

Units in charge of _____

Units in which you are a member _____

How long attached to this establishment _____

How long in present position _____

Naval Schools attended _____

1. Mission (objectives and functions) of own unit/s.

2. Background and history (origin, reorganizations, trend in size, major difficulties, plans for improvement) of own unit/s.

3. Work of the Executive

General breakdown of work involved in each position occupied, including Boards and Committees. Per cent of time devoted to each position and to the administrative functions involved in each.

5. Persons Dealt With (in order of length of time)

	<u>Name or Title</u>	<u>Kind of Business</u>
*Own Assistants (all persons directly under your supervision)		
()	_____	_____
()	_____	_____
()	_____	_____
()	_____	_____
()	_____	_____
()	_____	_____
()	_____	_____
()	_____	_____
()	_____	_____
()	_____	_____
()	_____	_____
()	_____	_____
()	_____	_____
Persons other than your own assistants (all superiors, subordinates, and associates in the entire establishment, other than your own assistants)		
()	_____	_____
()	_____	_____
()	_____	_____
()	_____	_____
()	_____	_____
()	_____	_____
()	_____	_____
()	_____	_____
()	_____	_____
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()	_____	_____

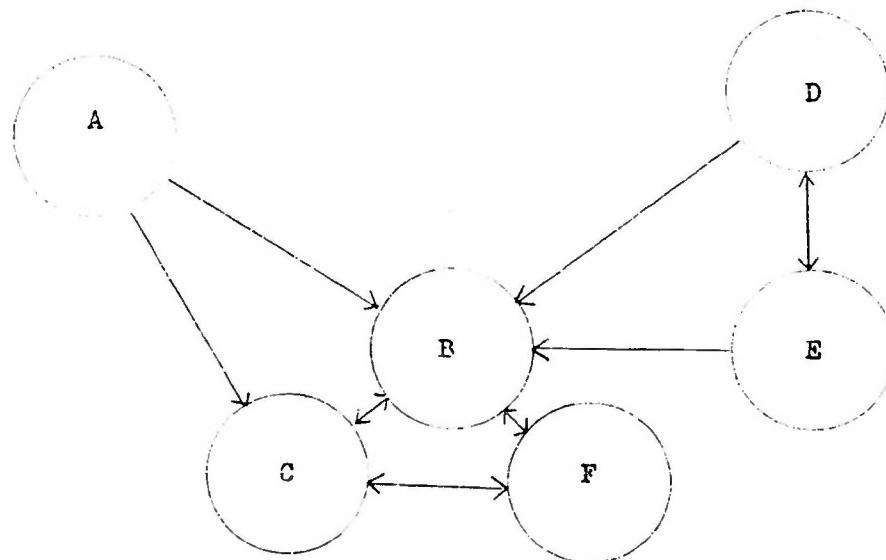
*Determine rank order of all above, combining Own Assistants with associates outside own unit.

B. SOCIO METRIC METHODS

Sociometry is a method which was devised for measuring the structure of preference relationships existing among the members of a social group. In military and industrial use this method is known as the "nominating technique" or the "buddy rating technique".

The basic method requires each member of a group to express a preference as to which members of his group he would most want for leader or roommate, or the like. Using such expressions of choice, a sociogram can be constructed showing how many times each member is chosen and by whom he is chosen. Chart I represents such a sociogram. The sociogram shows that person B is chosen by all members of the group. B, C, and F choose each other. D and E are each chosen once, but A receives no choices. F receives two, and C receives three, choices.

Chart 1. Sociogram



The basic question utilized for obtaining the data for this research was stated as follows: "With whom do you spend the most time in getting work done?" It was found necessary as the studies progressed to add clarifying instructions in such a manner as to eliminate the influence of atypical days. An officer might reply, for example, "Well, yesterday I spent most of my time with an officer who has just reported for duty". In order to overcome this type of difficulty the following instructions were added to the original question: "Think back over the past month. Consider all members of the organization here that you have contacted during business hours. With which ones have you spent the most time on a business basis? With whom, on the average, do you spend the most time in getting work done?"

Each person interviewed was encouraged to name several members, to describe the kinds of business transacted with each, and to rank the names in order according to amount of time spent. This method was later modified in order to overcome an additional difficulty. It was found that some officers tended to think only of their assistants and subordinates, while others tended to think only of superiors and associates at the same level in other departments. In the revised procedure, the person being interviewed was asked to name first, his assistants and subordinates in his own unit with whom he spent the most time, and, second, to name the superiors and persons at the same and in lower echelons in other units. He was then asked to consider the names in both lists combined, and to rank them in order according to time spent. This procedure appears necessary in order for each person to have a common understanding of the problem, and to obtain data comparable from one person to another.

Individuals differ in the facility with which they can differentiate among those with whom they work. Most of the persons interviewed were able to name the first two or three persons with a high degree of confidence. Some could name seven or eight work partners and express complete satisfaction with the order in which they were ranked. A fairly large number ranked the fourth, fifth, and succeeding persons with a diminishing degree of certainty. A very few stated that they were unable to discriminate among their immediate juniors, maintaining that they spent about an equal amount of time with each of them. Analysis of logs of working contacts in one organization indicated that this is a correct statement of the situation for some persons.

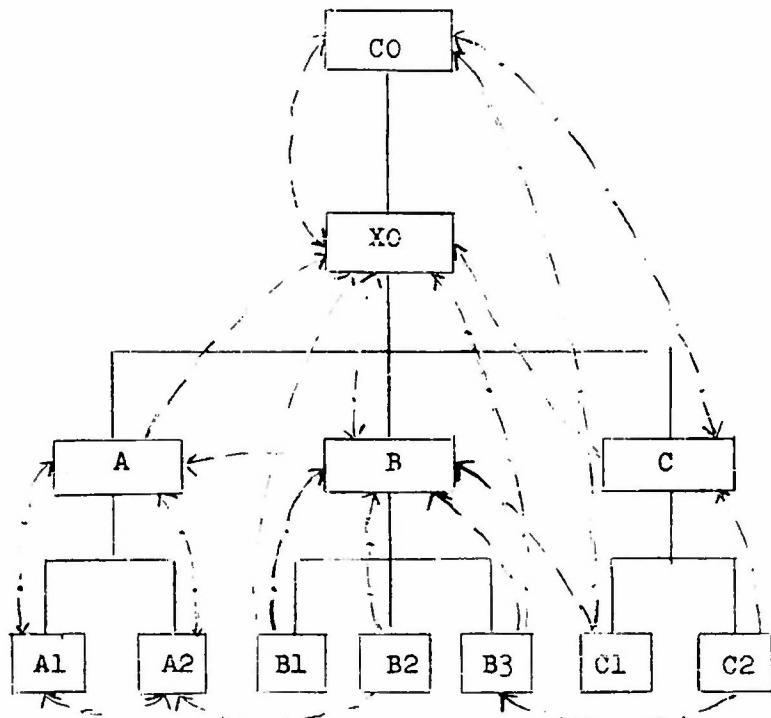
It will be noted that the present method is based on questions relating to actual, not preferred, associations with other persons. To ask a member to name those with whom he actually spends time may not be equivalent to asking him to name those with whom he would prefer to spend his time. The latter, a statement of preference, might be used as a criterion of leadership popularity. However, time actually spent with other persons in a formally structured organization may be determined not by personal choice, but by working proximity, lines of communication, work routing, requirements for coordination, emergency demands, and the like. Working sociometry, based on time spent with other persons, would appear to represent a measure of operative organization, rather than leadership preference. The structure of working relationships and the structure of leadership preferences are significantly correlated, but are by no means identical, as will be shown in a later section of this report.

Previous reports from this project have shown that a sociogram can be superimposed upon the organization chart to provide a picture of the working interrelationships among the members of an organization. The following example (Chart 2), which is a composite based upon several organizations, is shown for illustrative purposes.

It will be observed that the Commanding Officer (C.O.) mentions the Executive Officer (X.O.) and Department Head C as the two persons with whom he spends the most time in working contacts. The Commanding Officer is mentioned by the Executive Officer, Department Head C and Division Head C.1 as one of the two persons with whom they spend the most time on a working basis. Only the first two persons mentioned by each member are shown here in order that the chart will not be too complicated.

The Executive Officer mentions the Commanding Officer and Department Head B as work partners. He is mentioned by six persons. In most Naval organizations studied the Executive Officer receives the most mentions. This is in accord with expectation, since it is his function to coordinate the activities of the organization and to insure that the policies of the Commanding Officer are put into effect.

Chart 2. Sociogram Superimposed on Organization Chart



First Mention _____
Second Mention

In Department A, the members tend to mention each other as work partners. However, in Department C, the members tend to mention persons outside the department. Division Head C.1 tends to work more with the Commanding Officer and with Department Head B than he does with his own department head. Such a pattern of working relationships is likely to be exhibited by the Public Information Officer when he occupies a position lower than that of department head. The Commanding Officer is likely to consult with him directly on public relations matters rather than dealing with the department head.

In most organizations studied there have been found one or two department heads, such as Department Head B, who receive an unusually large number of choices. Interview data indicate that these nominations are likely to concentrate upon the department head who is at the focus of the activities and objectives of the organization at the time of the study. As activities change, the focus of choices may change to the department which is most critically involved in the new tasks to be performed.

In Chart 2, it will be seen that the department heads work with the Executive Officer. The division heads tend to work with their respective department heads, thus insuring intradepartment coordination. There are two contacts between departments B and C. These lateral contacts facilitate interdepartmental coordination.

The method illustrated in Chart 2 has practical utility in showing graphically those areas of organization in which working relationships are most highly concentrated, and the units of organization involved.

There are no set rules for determining how many mentions per individual should be plotted. However, it should be pointed out that if each person in an organization of five members is given four mentions, then each member will receive four mentions, and the scores will have no discriminating value. No matter how many mentions are finally used, there is much insight to be gained by plotting the first two mentions and making a count of scores and an inspection of the chart to see which members receive the most first and second mentions. The third mention may then be added to the chart, and then succeeding mentions.

In order to move from a pictorial to a quantitative level of description, a number of indices have been derived from the MG (mentions-given) and MR (mentions-received) scores. These are listed and defined in Table B1. One may mention other members within one's own unit of organization (GI), or one may mention others outside one's own unit (GO). One may mention seniors (GA), peers (GS), and juniors (GP). One may receive mentions from members within (RI) and outside (RO) one's own unit and from seniors (RA), peers (RS), and juniors (RB).

TABLE B1. SOCIO METRIC INDICES (Definitions)

MG	Mentions given--Total number of persons mentioned
GI	Mentions given <u>inside</u> own unit of organization
GO	Mentions given <u>outside</u> own unit of organization (persons in other units are named)
GA	Mentions given to persons in echelons <u>above</u> one's own
GS	Mentions given to persons in the <u>same</u> echelon as one's own
GB	Mentions given to persons in echelons <u>below</u> one's own
G2A	Mentions given to persons in echelons <u>2 or more levels above</u> one's own
G2B	Mentions given to persons in echelons <u>2 or more levels below</u> one's own
NEG	Number of echelons into which mentions are given
MR	Mentions received--Total number of mentions received
RI	Mentions received <u>inside</u> one's own unit of organization
RO	Mentions received from persons in units <u>other</u> than one's own
RA	Mentions received from persons in echelons <u>above</u> own
RS	Mentions received from persons in <u>same</u> echelon
RB	Mentions received from persons <u>below</u> own
R2B	Mentions received from echelons <u>2 or more levels below</u> own
R2A	Mentions received from echelons <u>2 or more levels above</u> own
NER	Number of echelons from which mentions are received
RM	Number of reciprocated mentions
MR/P	Number of mentions received divided by number of members within own unit minus self.

Other indices besides those listed in Table B1 have been derived, but they have proved to be rather insubstantial in that they result mostly in zero scores. Two of the indices (G2B and R2A) listed in Table B1, are examples of such insubstantial scores. This fact may be observed in Table B2, which illustrates a convenient method for counting scores for the various indices.

In the left hand column of Table B2 are listed the persons who give mentions to other members of the organization. In the top row are listed the members who receive mentions from those listed at the left. It will be observed that the C.O. gives mentions to X.O., A, B, and B3. Moving to the right hand section of the table, his total of four mentions given is recorded under MG. His mention given to the X.O. is entered under GI. He has no superiors or peers in the organization so zero scores are entered under GA, GS, and G2A. His four mentions are given to juniors and are entered under GB. Three mentions are given to members who are removed two or more echelons below his own (G2B). He gives mentions to persons in three separate vertical echelons (NEG). He gives three mentions (to X.O., B, and B3) which are reciprocated (RM).

The count of mentions-received scores moves down from the top of the table. Department Head A receives six mentions, which are recorded after (MR) in the lower left segment of the chart. He receives two mentions from members (A1, A2) within his own unit (RI). He receives four mentions from persons outside his unit (RO). He receives two mentions from seniors (RA), two from peers (RS), and two from juniors (RB). He receives no mentions from members two or more echelons below his own, (R2B), and only one from a member (the C.O.) who is two or more echelons above his own (R2A). He receives mentions from members who are located in four different echelons of the organization (NER). His total mention-received score (MR) is six. There are only two members besides himself in his unit of organization. Therefore his MR/P score is 6/2 or 3.0.

Scores such as those described above serve to indicate whether a member tends to work with members within his own unit or with members outside his unit, and whether he tends to work with seniors, peers, or juniors.

Reliability of the Indices

A Naval district command staff cooperated in a study designed to determine the test-retest reliabilities of the methods employed in the Studies in Naval Leadership. The tests were administered once to 34 officers. The same tests were administered again one month later. Thirty-two officers participated in both studies. The primary change in the formal structure of the organization consisted in the assignment of a new officer to fill the dual position of Assistant Chief of Staff for Operations and Assistant Chief of Staff for Logistics, which positions were filled by other officers in an acting capacity at the time of the first study.

The means, standard deviations and correlation coefficients derived from data provided by officers who participated in both the first and second studies are shown in Table B3. All mentions given by each officer were used in computing the scores.

It will be noted that more persons, on the average, were mentioned during the restudy than during the first study. It is possible, and probable, that this difference is less an expression of organization change than of a greater feeling of confidence on the part of the officers being interviewed in the motives and purposes of the interviews in obtaining such data.

The correlation coefficients in the right hand column range from .10 for GS to .97 for RB. The test-retest correlations of mentions given scores (MG, GI, GO, GA, GS, GB, G2A and NEG) range from .10 to .82. The mentions received scores (MR, RI, RO, RA, RS, RB, R2B, NER and MR/P) are considerably higher. These range from .57 to .97. The correlations for MR, RF, and R2B are above .90. If these test-retest

TABLE B2. COUNT OF SOCIOMETRIC SCORES

PERSON	CO	XO	A	A1	A2	B	B1	B2	C	C1	Mentions Given									
											MG	GI	GO	GA	GS	GF	G2a	G2b	NEG	EW
CO	★	△	□	○	★	□	★	△	○	△	1	3	0	0	0	3	3	3	3	
XO	○	□	★	○	□	★	○	△	○	△	0	3	4	0	0	0	0	0	2	
A	★	□	△	○	○	△	○	△	○	△	1	3	2	0	0	3	0	2	4	
A1	★	□	○	○	△	○	○	△	○	△	2	2	3	4	0	2	0	0	3	
A2	★	□	☆	△	○	△	○	△	○	△	4	1	3	4	0	0	0	0	0	
B	□	□	□	□	★	★	△	△	○	△	4	1	3	2	1	1	1	0	3	
B1	□	□	□	□	□	★	★	△	△	△	2	1	2	1	0	0	0	0	1	
B2	△	□	○	△	○	△	○	△	○	△	0	4	2	2	0	0	0	0	3	
B3	○	□	☆	△	○	○	○	○	○	○	0	1	0	0	0	0	0	0	2	
C	○	○	○	○	○	○	○	○	○	○	0	1	0	0	0	0	0	0	0	
C1	○	○	○	○	○	○	○	○	○	○	0	1	0	0	0	0	0	0	0	
											12	25	21	8	8	8	10	3	31	20
											37									
IN	6	9	6	0	1	8	1	1	2	3	0									
RI	1	1	2	0	1	3	1	1	1	0										
RO	4	8	4	0	0	5	0	0	1	2										
TA	0	1	2	0	0	2	0	0	2	1										
RS	9	0	2	0	1	2	1	1	0	1										
RB	6	8	2	0	0	4	0	0	0	1										
R2B	5	5	0	0	0	0	0	0	0	0										
R2A	0	0	1	0	0	0	1	0	0	0										
NFR	3	3	4	0	1	4	1	1	2	3										
MR/P	1/1	1/1	6/2	2/2	1/2	6/3	1/3	1/3	2/3	3/4	0/4									

Checks:
 ★ = First Person Named
 □ = Second Person Named
 △ = Third Person Named
 ○ = Fourth Person Named

Checks:
 MG = MR
 G2B = R2A
 G2A = R2B
 MG = GT
 MG = GA
 MG = RA
 MG = RS
 MG = RB

GA = RA
 RS = RB

Mentions Received

TABLE B3. TEST-RETEST CORRELATIONS OF EIGHTEEN SOCIO METRIC VARIABLES; MEANS AND STANDARD DEVIATIONS (N=32)

Variable	First Study		Second Study		r
	M	SD	M	SD	
MG	2.8	1.5	3.7	1.9	.57
GI	1.6	1.2	2.2	1.6	.73
GO	1.2	1.3	1.5	1.2	.60
GA	1.5	1.0	2.0	1.3	.79
GS	.4	1.1	.8	.7	.10
GB	.8	1.3	.9	1.1	.74
G2A	.6	1.2	1.0	.8	.82
NEG	2.2	1.0	2.8	1.1	.64
MR	2.8	2.9	3.7	2.8	.92
RI	1.5	2.2	2.2	2.2	.89
RO	1.2	2.2	1.5	2.4	.85
RA	.8	1.2	.9	1.2	.72
RS	.4	.9	.8	1.0	.57
RB	1.5	2.5	2.0	2.5	.97
R2B	.6	1.8	1.0	2.3	.93
NER	1.5	1.7	2.2	1.4	.76
RM	1.0	1.1	1.9	1.7	.78
MR/P	1.0	1.1	1.8	1.2	.79

r05 = .45

r01 = .35

correlations are regarded as reliability coefficients it is apparent that the mentions received scores are more reliable than the mentions-given scores for this organization.

It should be pointed out that MG is a function of the individual, while MR is a function of the group in relation to the individual. The group scores appear to be considerably more stable than the individual scores.

Estimated Time Compared with Logged Time

Data derived from the study of a Naval air station permit an approximate determination of validity of the sociometric scores. In the course of interviewing 44 commissioned officers, each was asked to name the other officers on the station with whom he spent the most time in getting work done.

During the second week in which interviews were being conducted, the officers were asked to keep a log of work performance. The log sheet was marked off in one minute intervals from 8:00 A.M. to 5:00 P.M., so that the end of one kind of work performance or personal contact and the beginning of another kind of performance or contact with another person could be indicated by a check mark at the appropriate hour and minute of the day. Kinds of work performance were coded so that kind of work being done could be indicated on the log by a code number. Similarly the names of persons contacted were indicated on the log by code letters.

Examination of the logs indicates that the 32 officers who kept the log during the three day period contacted an average of 14 persons each daily. Six of these persons were other officers within the organization. Eight of the persons contacted were enlisted or civilian personnel or persons outside the organization. Only time spent in making contacts with other officers within the organization was used in computing the logged sociometric score. Time spent in formal staff conferences was not included because few officers listed the names of all persons attending the staff meetings. The smallest number of persons contacted in a day was three. The chaplain logged contacts in one day with 54 persons, all enlisted personnel or civilian visitors.

Most of the logs showed multiple contacts with certain persons during the day. The total daily time spent with single individuals ranged from 1 to 150 minutes. Approximately half the persons contacted involved less than ten minutes of working time daily.

Each officer's logged sociometric scores consisted of the total time logged over a three day period with each person whom he contacted. In general, unless an officer spent more than 20 minutes in working time with another officer during the three day period, that contact was omitted from the sociometric chart. This cutting point was adopted on the assumption that working interactions of longer total duration might be more representative (i.e. less subject to determination by chance circumstances) than shorter contacts. Although the average officer contacted fourteen persons daily, only six of these contacts were with other officers in the organization, and some of these were of too short duration to show on the sociometric charts. It is for this reason that the average number of mentions given and received is lower on the logged charts than on the estimated charts.

It was possible to determine for each officer the amount of time logged as having been spent with other officers during the three day period. These logged time scores can be used to construct sociograms and derive sociometric indices in the same manner that nominations are used. Since logged time represents a comparatively accurate measure of time spent with other persons, it might be used as a criterion score.

Among the mentions-given scores, time logged as spent with juniors (GB) and with persons two or more echelons above own (G2A) are most highly correlated with estimated time with these persons. The correlation of .20 for GS indicates that estimates and the log are not in close agreement as to time spent with peers.

TABLE B4. CORRELATION OF LOGGED TIME WITH ESTIMATED TIME (N = 32 OFFICERS)

Variable	Log		Estimate		r
	M	SD	M	SD	
MG	3.3	1.4	4.2	2.0	.45
GI	1.8	1.1	2.1	1.6	.58
GO	1.5	1.3	2.1	1.6	.53
GA	1.4	1.3	2.0	1.6	.47
GS	1.0	.9	1.4	1.1	.20
GB	.9	1.3	.8	1.3	.84
G2A	.5	.8	.7	1.1	.85
NEG	2.4	.9	2.4	.8	.46
MR	3.3	2.4	4.2	2.9	.65
RI	1.3	1.7	2.1	1.8	.73
RO	1.5	1.6	2.1	2.8	.65
RA	.9	1.3	.8	1.1	.69
RS	1.0	1.1	1.4	1.3	.36
RB	1.4	2.1	2.0	2.6	.71
R2B	.5	1.3	.7	1.8	.82
NER	2.0	1.0	2.0	1.0	.52
RM	1.6	1.2	1.9	1.7	.59
MR/P	2.2	1.3	2.4	1.5	.46

$$r_{05} = .45$$

$$r_{01} = .35$$

Among the mentions-received scores, the number of mentions received from persons two or more echelons below one's own (R2B) are most highly correlated with the logged scores. The correlation is .82. All the mentions-received scores are significantly correlated with their respective criterion scores. All except RS, and NER are correlated above .60 with the criterion scores. In the field of personnel studies, tests with this level of validity are generally regarded as useful for selection purposes. Number of mentions received from juniors (RB) is correlated .71 with the corresponding score obtained from the log, while the correlation between logged scores and estimated scores is .73 for mentions received within own unit (RI).

When data from all members who participated in either phase of the study are used in computing sociometric scores, the correlation of logged time with estimated time for MG is .31 and for MR is .65. The reason for the negative correlation for MG is that if a person failed to keep the log he could only be given a zero score for logged MG, but he might have mentioned several persons as work partners in his estimates. Conversely if he failed to give any mentions his score for estimated MG would be zero, although he might have recorded contacts with several persons on the log. In computing validity and reliability coefficients for sociometric scores it is important to utilize data only from those persons who respond to both phases of the study.

If log scores may be accepted as criteria, then the most valid measures of working relationships for the sample under study are GB, R2B and G2A. However, GI, MR, RI, RO, RA, RB, and RM are also highly enough correlated with their respective criteria to be regarded as valid measures of working relationships.

Relations of Indices to Other Measures

The correlation of the sociometric indices with several other measures are shown in Table B5.

It will be observed that GI, GA and G2A and RA are negatively correlated with level. This is in accord with expectation, since those in the highest echelons have few seniors to whom they can give mentions and those in the lowest echelon can mention only seniors or peers. GB is positively correlated to a fairly high degree with level. MR, RO, RB, R2B, NER, RM and MR/P are also positively and significantly correlated with level. Those in the higher echelons tend to be mentioned more frequently as work partners. These results suggest that some types of working relationships in operative organization are probably conditioned to a fairly high degree by the general formal structure of a Naval organization.

It may also be seen that those officers who give choices to persons outside their units (GO), to seniors (GA) and to peers (GS) tend to receive fewer nominations for "best leader" from enlisted men. Those who are mentioned most frequently by persons within their own units (RI) tend to receive a significantly large number of nominations for "best leader".

Those officers who receive no total mentions (MR), more mentions from juniors (RI) and fewer mentions from outsiders (RO) are rated higher in military leadership by their senior officers.

TABLE B5. CORRELATION OF SOCIO METRIC INDICES WITH OTHER MEASURES

Indices	Level (1)	Correlation Coefficients		
		"Best Leader" (2) Nominations	Military (2) Leadership	Integration (2)
MC	.04	-----	-----	-----
GI	-.25	.14	.03	.04
GO	.38	-.23	.10	-.29*
GA	-.50	-.31*	-.04	-.34*
GS	.07	-.24	.02	-.35*
GB	.64	.18	.15	.10
G2A	-.53	-----	-----	-----
NEG	-.01	-----	-----	-----
MR	.59	.23	.28*	.26*
RI	.21	.35**	.06	.51**
RO	.69	-.08	-.36**	-.27*
RA	-.29	.00	.03	-.18
RS	.09	-.14	.11	-.23
RB	.82	.23	.26*	.29*
R2B	.79	-----	-----	-----
NER	.60	-----	-----	-----
RM	.46	-----	-----	-----
MR/P	-.77	-----	-----	-----

(1) N = 42 officers on a cruiser
 (2) N = 62 officers on submarines

* = Significant at .05 level

** = Significant at .01 level

Those who give more mentions to outsiders, seniors and peers (GO, GA and GS), and who receive more mentions from those persons (RO, RA, and RS) are described by juniors as engaging less frequently in integratinal behavior. Those officers who receive more total mentions (MR), mentions from persons in own unit (RI) and from juniors (RB) are described by enlisted men as engaging more frequently in integrative behavior. The correlations between sociometric scores and other leader behavior scales (organization, communication, representation, and relations with juniors) follow a similar pattern.

Use of Work Sociometry

It has been shown that the sociometric indices are not highly correlated with such criteria of leadership quality as ratings by seniors and nominations by juniors. Preference sociometry appears to be more useful than work sociometry for establishing leadership criteria.

The methods developed for the Studies in Naval Leadership would appear to be most useful for determining the relationship between formal structure and the structure of working relationships in an organization. This relationship may be shown by superimposing a sociogram on the formal organization chart, or by correlating the sociometric indices with other measures.

C. ORGANIZATION CHARTS AND MANUALS

A study of organization charts, organization manuals, and personnel rosters can be of considerable value in gaining an understanding of the structure of an organization. Most of the information provided by these sources can be obtained by means of interviews with top level personnel. However, the experience of the research staff of this project has shown that even high ranking officers may differ in their conceptions of the structure of an organization. When this situation has been encountered, it has been the practice of the research staff to request that the Commanding Officer (or President) of an organization indicate his conception of the organization by correcting the latest available edition of the organization chart to show the "present" structure of the organization. This corrected chart was accepted by the research staff as representing the "official" organization chart at the time the study was being made. When lower ranking personnel indicated conceptions of organization which deviated from the "official" organization chart, their deviations were regarded as representing perceptual error. Whatever the arguments that may be advanced in opposition to this procedure, they must be set aside in favor of a more potent argument. The Commanding Officer of a Naval organization is, with certain exceptions, empowered to assign and reassign the personnel under his command to positions (and to the duties allotted to the positions) as he may deem necessary in order to accomplish the mission of the organization. Although this power is limited by custom, by various regulations, and by the weight of what has existed and worked satisfactorily in the past, it is nevertheless true that the Commanding Officer may depart from the standard organization charts prescribed by the Secretary of the Navy when the necessity exists.

Organization charts have served another important function in the present research. Sociometric diagrams have been superimposed on organization charts in order to compare the structure of working relationships among the members with the formal organization structure.

Organization manuals which outline the duties of the various billets within an organization are of value in gaining an understanding of the formally defined responsibilities of the persons (or positions) being studied.

Personnel rosters, used in conjunction with organization charts, are of value in selecting samples of subjects in the event that it is impossible to study all members of an organization.

Other records that have been employed in the Studies in Naval Leadership include operational readiness reports, inspection board reports, reenlistment records, personnel turnover records, disciplinary records of enlisted personnel, and the like. Such records are of value in establishing criteria of organization effectiveness.

D. THE RAD SCALES

The RAD Scales were designed to measure different degrees of perceived responsibility, authority and delegation as exhibited by individuals who occupy administrative or supervisory positions. They may be used by an individual for purposes of indicating the nature of his own perceived responsibility, authority and delegation, or they may be used by an observer to describe another person. An attempt has been made to state the items in such general terms that they may be applied in any formally structured organization.

Scale Construction

The first step in constructing the RAD Scales was to collect a large number of items describing different degrees or levels of Responsibility, a second set of items describing Authority, and a third set describing Delegation. The items were collected from staff members of the Personnel Research Board and from graduate students in classes in Industrial Psychology. A large percentage of the students had served in the armed forces as commissioned officers, and a considerable percentage had been employed in a variety of industrial and business concerns.

The three sets of items were edited and prepared in mimeographed form in such a manner that each item could be given a numerical value ranging from zero through eight. The scaling method is essentially a modification of Thurstone's method of equal appearing intervals.

* Thurstone, L. L., and Chave, E. J. The Measurement of Attitude. Chicago: Univ. Chicago Press, 1929.

The same students who constructed lists of items also "sorted" them for purposes of obtaining scale values. However, instead of sorting the items into numbered piles, the sorters were instructed to indicate the scale value of each item on a mimeographed list. The directions for the Responsibility Scale were as follows:

Please sort (or rate) the following items on a scale of (0) to (8) to indicate the degree of responsibility represented by the item.

Let (8) represent the highest possible degree of responsibility

Let (7) (6) (5) represent decreasing degrees

Let (4) represent a neutral (neither high nor low) degree

Let (3) (2) (1) represent decreasing degrees

Let (0) represent the lowest possible degree of responsibility.

The average scale values of the items included in Form X of the scale are shown in Table D1. Since items with wide dispersion values were rejected, the use of means rather than median scale values, does not give undue weight to the results of sorters who deviated one or two scale steps from their fellow sorters in assigning scale values to an item.

TABLE D1. MEAN SCALE VALUES OF ITEMS IN SCALES I TO VI

Item Number	Scale I Resp.	Scale II Auth.	Scale III Deleg.	Scale IV Resp.	Scale V Auth.	Scale VI Deleg.
1	7.3	7.7	7.8	7.4	7.9	7.2
2	6.5	7.0	6.6	6.4	7.0	6.5
3	5.0	5.6	5.8	5.0	5.7	5.7
4	3.9	5.0	4.6	4.0	5.0	4.6
5	3.0	3.7	3.6	3.1	3.8	3.6
6	2.3	3.0	2.7	1.8	3.3	2.3
7	1.4	2.2	1.2	1.0	2.5	1.6
8	0.5	1.0	?	0.0	1.3	.3

A variety of formats and scoring methods was tried on an experimental basis. During the years 1947, 1948, and 1949 the scales were revised after each study of an organization. New items were constructed on three separate occasions. On the third revision more than 2,600 items were collected. From these the 90 most promising items from each scale were selected for temporary use on the basis of range of scale values

and small standard deviation of scale values, as determined by the sortings of 47 graduate students. In each item analysis those items were retained which contributed most toward interval consistency (correlation of item with total score of two scales combined) and reliability (correlation of two different forms of the same scale).

Results with the first experimental forms indicated that the scores were non-differentiating when subjects were requested to check all items descriptive of their own situations. Poor reliabilities (Form A vs. Form B) were obtained when subjects checked only the single most descriptive item in each scale. Highest reliabilities were obtained when the two most descriptive items in each scale were checked, and when a Likert type of scaling* was employed. In Table D2 are shown the reliability coefficients obtained by three methods of administration for Form V of the scales. The subjects are 18 commissioned officers in advanced graduate training. Each officer described his last military billet before enrolling in the university.

TABLE D2. RELIABILITY COEFFICIENTS (FORM A VS. FORM B)
UNDER THREE METHODS OF ADMINISTRATION

Scale	Thurstone Scale		Likert Scale Total - All Items
	Single Best Item	Average of Two Items	
R	.17	.42	.46
A	.27	.40	.44
D	.21	.30	.44

Although a Likert Scale yields somewhat higher reliabilities, it was decided to use a Thurstone-type scale because of its ease of administration and scoring.

Experience with experimental forms of the scales indicated that some subjects became perplexed when the items were arranged in scrambled order. There is a school of belief among psychologists which maintains that subjects may be expected to give more honest replies when they can be prevented from knowing what they are doing. Since the validity of this assumption is yet to be demonstrated, and since the scales were not designed to test the ingenuity or moral rectitude of the subjects, it was decided to present the items in order of scale value.

* Likert, R. A Technique for the Measurement of Attitudes. Arch. Psychol., N. Y., No. 140, 1932.

In a Thurstone-type scale one arbitrarily selected extreme of the scale is assumed to represent a zero point on a continuum. For the RAD Scales, it cannot be assumed that the zero points of any two scales, even though they measure the same continuum (e.g., responsibility), occupy the same point on a continuum represented by a universe of such scales. For this reason, a score of 6.5 on one scale cannot be regarded as necessarily equivalent to a score of 6.5 on another scale.

The scaling method merely served as a means for ordering the items on a continuum so that they are separated by somewhat less than one full scale step on the average. In order to avoid the appearance of a degree of accuracy and refinement which is not present in the scales, the computed scale values of the items were replaced by the numbers one to eight. The correlation between scores obtained with the substitute scale values and scores obtained with the computed scale values is .99/ for two different samples.

Reliability

The RAD Scales were subjected to nine different revisions, primarily with the aim of improving reliability. The maximum possible range of scores in the final forms was from 1.5 to 7.5. Since subjects tend to check items with the higher scale values, the range of scores is further reduced. When scores are so markedly attenuated, it is difficult to obtain high reliability coefficients. In Table D3 are shown the reliability coefficients (corrected by the Spearman-Brown formula) when the average of two items checked in Scale I (Responsibility) is correlated with the average of two items checked in Scale IV (Responsibility), when Scale II (Authority) is correlated with Scale V (Authority), and when Scale III (Delegation) is correlated with Scale VI (Delegation).

TABLE D3. RELIABILITY COEFFICIENTS OF RAD SCALES - FORM X

Type of Organization	Number of Subjects	Reliability Coefficients		
		Responsibility Scale I vs. IV	Authority Scale II vs. V	Delegation Scale III vs. VI
Air Station	39	.63	.72	.73
Sub-marines	69	.60	.57	.83
Command Staff	22	.70	.75	.79

TABLE D3. RELIABILITY COEFFICIENTS OF RAD SCALES - FORM X
(Continued)

Type of Organization	Number of Subjects	Reliability Coefficients		
		Responsibility Scale I vs. IV	Authority Scale II vs. V	Delegation Scale III vs. VI
LSTs (I)**	48	.66	.72	.39
LSTs (II)**	46	.80	.28	.86
District Staff (I)*	34	.73	.82	.60
District Staff (II)*	33	.70	.68	.90
School Principals	73	.86	.81	.78

** The landing ships (LST) were studied twice, with approximately six months intervening.

* The district command staff was studied twice, with approximately one month intervening.

Another source of evidence relative to the reliabilities of the scales is provided by those organizations which were studied on two separate occasions. A Naval District Command Staff was studied twice, with one month intervening. The test-retest correlations of the RAD Scales for 32 officers who filled out the forms on both occasions are .62 for Responsibility and .55 for Authority. The test-retest correlation for Delegation is .73. These should be regarded as minimum reliabilities, since it is probable that the correlations were lowered by changes in the organization. The addition to the staff of a high echelon officer as a Department Head during the interval between the two studies probably changed the responsibility and authority status of a number of officers.

Validity

No claims are made for the validity of the RAD Scales. Responses to the scales represent merely what a subject is willing to say about his responsibility, authority and delegation. An observer's

perceptions of a subject's responsibility, authority and delegation can hardly be regarded as an adequate criterion, because it is highly probable that an observer's perception of his own responsibility and authority may condition his perceptions of another's responsibility and authority.

There is a tendency for persons in administrative positions to perceive their own responsibility (or authority) as it is perceived by their juniors and seniors. The data shown in Table D4 reveal a positive correlation between self-descriptions and descriptions by others. These results also indicate much greater agreement between self-reports and reports by juniors and seniors in describing responsibility than in describing authority or delegation.

TABLE D4. CORRELATION BETWEEN SELF DESCRIPTIONS AND DESCRIPTIONS BY JUNIORS AND SENIORS IN TWO NAVAL ORGANIZATIONS

Type of Organization	Persons Described	Number Described	Correlations		
			R	A	D
Air Station	Juniors*	41	.71	.22	.39
Research Staff	Seniors **	47	.65	.33	.28

* In the Naval Air Station, the same senior in some instances described several juniors.

** In a Naval Air Research and Development Command, the score of each senior was correlated with the average score of two juniors who described his behavior.

Administration and Scoring

The scales may be administered individually or in groups. The instructions require the subject to double check () the most descriptive item in each scale and to check () the next most descriptive item. Since there are two scales that measure responsibility, for example, the score for R is obtained by computing the sum of the four items checked in the two scales and dividing the sum by four. The scales are self-administering.

The scoring key is the same for each of the six scales. The item scores for each scale are shown below. A high score indicates a high degree of estimated responsibility, authority or delegation.

Scoring Key

Item Number	Scale Value
1	8
2	7
3	6
4	5
5	4
6	3
7	2
8	1

The score for R (Responsibility) is the sum of the four items checked in Scales I and IV divided by four.

$$R = \frac{\text{Scale I (2 items)} + \text{Scale IV (2 items)}}{4}$$

The score for A (Authority) is the sum of the four items checked in Scales II and V divided by four.

$$A = \frac{\text{Scale II (2 items)} + \text{Scale V (2 items)}}{4}$$

The score for D (Delegation) is the sum of the four items checked in Scales III and VI divided by four.

$$D = \frac{\text{Scale III (2 items)} + \text{Scale VI (2 items)}}{4}$$

Because of the simplicity of the scoring method, no separate scoring key is provided.

Norms

There are no norms for the RAD Scales. The use of norms in personnel testing implies the establishment of reference points against which practical considerations may be weighed. It will be necessary to accumulate a large body of information before any idea can be gained regarding what is a "normal" degree of responsibility or authority for a particular type of administrative position in any given type of organization.

The data in the following tables are presented, not as norms, but as a start toward building up a body of information. In Table D5 are shown the average R, A and D scores of groups of officers who occupy the same named positions in the same type of organization. Data are presented only for those groups which are represented by three or more officers in the same specialty in the same type of organization.

TABLE D5. AVERAGE R, A AND D SCORES OF COMMISSIONED OFFICERS IN VARIOUS NAVAL BILLETS

Type of Billet	Type of Organization	N	Average Score		
			R	A	D
Commander	Command Staff	6	5.8	5.6	7.2
Chief of Staff	Command Staff	4	7.0	6.5	5.3
Commanding	Submarines	9	6.7	7.4	7.0
Commanding	Destroyers	3	6.5	7.0	7.0
Commanding	LSTs	9	6.2	6.1	7.3
Executive	Submarines	10	5.7	5.6	6.4
Executive	Destroyers	3	6.0	6.0	6.0
Executive	LSTs	8	4.9	6.3	6.5
Admin. Asst.	Shore Station	6	5.4	5.2	5.2
Research	Shore Station	7	5.0	3.9	3.4
Personnel	Bureau	6	5.5	5.5	6.7
Personnel	Command Staff	4	5.0	4.3	4.3
Training	Bureau	7	7.1	5.9	6.9
Training	Shore Station	5	7.0	4.6	5.8
Education	Bureau	5	5.0	5.2	5.5
Administration	District Staff	3	5.7	4.7	5.7
Legal	Shore Station	4	6.3	6.3	4.3
Pub. Info.	C. N. O.	8	6.0	5.3	4.7
Publications	Shore Station	6	5.0	3.7	3.8
Operations	Command Staff	6	6.7	5.0	6.1
Operations	Submarines	5	4.6	4.8	3.6
Operations	LSTs	3	4.6	3.5	4.0
Supply	Command Staff	6	7.0	6.5	6.0
Supply	Submarines	7	5.6	5.3	5.9
Supply	LSTs	5	5.8	5.6	4.0
Accounting	Command Staff	4	7.3	6.5	5.2
Medical	Command Staff	6	4.5	3.8	4.7
Engineering	Submarines	10	6.2	5.7	5.6
Engineering	LSTs	9	4.9	5.1	5.7

Inspection of the table reveals rather marked differences among the various specialties. Those groups of officers which show the highest scores for responsibility are Chief Staff Officers, Supply Officers and Accounting Officers of Command Staffs, Training Officers of a Naval Bureau, and Training Officers of Naval Shore Stations. Commanding Officers of submarines and destroyers rate themselves highest in authority. Those who describe themselves as delegating most authority to their immediate assistants are Commanders of Command Staffs, and Commanding Officers of Naval ships.

Use of the Scales

The RAD Scales were developed for experimental purposes. They should be used with caution by the practitioner.

It is believed that the scales have practical utility in gaining an increased understanding of responsibility-authority relationships among the members of organized groups. However, there is much experimental work to be done before any existing devices can be employed with confidence in the solution of day-to-day operating problems relative to responsibility and authority in military and industrial organizations.

Results obtained with the RAD Scales in a wide variety of Naval organizations suggest that the problem of responsibility and authority has been greatly over-simplified by writers on organization theory, social engineering, industrial management and military command. Results from the Naval Leadership Studies project suggest that patterns of responsibility-authority relationships differ in large and small organizations. The results also suggest that in order to understand the authority-responsibility relationships exhibited by a given senior and his immediate juniors, it may be necessary to study the authority-responsibility-delegation pattern of a senior in a still higher echelon of the organization (or of juniors in lower echelons). Therefore, if it should be found in the study of a unit of organization that a particular senior is failing to delegate adequately to his juniors, the finding does not automatically imply the recommendation that the senior be instructed to give his juniors more authority. It might be well to determine whether the juniors are sufficiently capable or willing in carrying out the responsibilities assigned to them, or whether the source of the difficulty might be located in a higher or lower echelon.

The patterns of relationships that operate in authority-responsibility interactions are of such a complex and obscure nature that they are not readily apparent to direct observation. Therefore, instruments such as the RAD Scales can be of considerable value in building a body of information which will aid in a better understanding of the operations of organized groups.

It cannot be too strongly emphasized that the RAD Scales were devised for experimental purposes. They should be used with caution as diagnostic devices.

THE OHIO STATE UNIVERSITY
Leadership Studies

Name _____

Position _____ Date _____

Directions: Below are six separate scales. Two of these scales describe different degrees of responsibility. Two describe different degrees of authority, and two describe different degrees of authority delegated to assistants and subordinates.

For each scale please: double check (✓✓) the single statement which most accurately describes your status and practices in carrying out your duties, and check (✓) the next most descriptive statement.

Double check (✓✓) = most descriptive statement
Check (✓) = next most descriptive statement

Scale I

- () 1. I am responsible for the formulation and adoption of long range plans and policies.
- () 2. I am responsible for making decisions which define operating policies.
- () 3. My superior gives me a general idea of what he wants done. It is my job to decide how it shall be done and to see that it gets done.
- () 4. It is my responsibility to supervise the work performed by my assistants and subordinates.
- () 5. The operations of my unit are planned by my superiors. It is my responsibility to see that the plan is executed.
- () 6. It is my responsibility to carry out direct orders which I receive from my superior officers.
- () 7. My responsibilities and duties are assigned daily in the form of specific tasks.
- () 8. My superior approves each task I complete before I am permitted to undertake another.

Scale II

- () 1. I have complete authority for establishing policies and goals of a general scope and establishing the lines of organizational authority and responsibility for the attainment of these goals.
- () 2. I am authorized to make all decisions necessary for the implementation of long range plans.
- () 3. In the main I can make and carry out all decisions which fall within the realm of established policy without consulting my superior or obtaining his approval.
- () 4. I have complete authority on routine matters but refer the majority of unusual items to my superior for approval.
- () 5. All questions of policy must be referred to my superior for his decision.
- () 6. I frequently refer questions to my superior before taking any action.
- () 7. I seldom make decisions or take action without approval from my superior.
- () 8. My work procedures are fully outlined and allow little freedom in making decisions.

Scale III

- () 1. My assistants have been granted authority to fulfill their duties in any manner they deem advisable.
- () 2. My assistants have full authority, except that I retain the right to approve or disapprove of decisions affecting policy making.
- () 3. My assistants have been authorized to make decisions on problems as they arise, but must keep me informed on matters of importance.
- () 4. My assistants have authority to handle all routine matters in day to day operations.
- () 5. My assistants may act in most routine matters.
- () 6. Many of the responsibilities of my office cannot be entrusted to assistants.
- () 7. My assistants have no actual authority to take action, but make recommendations regarding specific action to me.
- () 8. I dictate detailed orders to my subordinates which they must carry out exactly as I specify, consulting me frequently if they are in doubt.

Scale IV

- () 1. I am responsible for decisions relative to changes in long term policy.
- () 2. I am responsible for making decisions relative to methods for effecting major changes in operations.
- () 3. My superior always informs me as to the tasks to be performed and I am solely responsible for deciding how to fulfill these tasks and supervising their performance.
- () 4. It is my responsibility to supervise the carrying out of orders which I receive from my superior.
- () 5. I am responsible for making decisions relative to routine operations.
- () 6. I execute direct orders given me by my superiors.
- () 7. I have only my own routine tasks to account for.
- () 8. I am not responsible for making decisions.

Scale V

- () 1. I have complete authority for formulating policies of general nature and scope and for establishing lines of the entire organizational authority and responsibility.
- () 2. I am authorized to make decisions which put all major plans and policies into action.
- () 3. I refer only matters of an exceptional nature to my superior for approval. I settle most problems myself.
- () 4. In situations not covered by instructions I decide whether action is to be taken and what action to take.
- () 5. I have no authority to act in matters where policy is not clearly defined.
- () 6. I have authority to make decisions only as they are related to my own routine tasks.
- () 7. I make decisions only when given explicit authority.
- () 8. I follow a work schedule laid out for me by my superiors and have little authority to make changes.

Scale VI

- () 1. I make decisions only when consulted in unusual circumstances, authorizing my assistants to exercise a high degree of authority and responsibility in making decisions.
- () 2. I have delegated full authority to my assistants, other than the rights to prescribe policy and pass upon broad procedures.
- () 3. I give my assistants a general idea of what I want done. It is their responsibility to decide how it shall be done and to see that it gets done.
- () 4. I have delegated to my assistants authority to make all routine daily decisions.
- () 5. I make most decisions coming within my scope of authority, although my assistants assume considerable responsibility for making decisions in routine matters where policies and procedures are well established.
- () 6. I supervise my assistants fairly closely in their exercise of authority.
- () 7. I make all important decisions coming within my scope of authority. My assistants are responsible for making decisions only in minor matters.
- () 8. I have not found it advisable to delegate authority to my assistants.

E. WORK ANALYSIS FORMS

The Work Analysis Forms were designed to measure various aspects of administrative performance. They represent a modified form of job analysis. The forms may be used by a subject for recording his estimates of the amount of time he spends in various kinds of work, or they may be used by an observer to record his estimates of another persons' work.

These forms were originated for use in the Ohio State Leadership Studies as the result of interviewing a sample of high level business electives, who were asked to describe their work in their own terms. The data obtained from these interviews were employed as a basis for compiling a list of executive responsibilities or functions. These items were used in a number of experimental forms for the study of Navy organizations. In the earliest forms, the subjects were asked to estimate the amount of time (in hours or minutes) spent in various kinds of work. In addition to the list of items, several spaces were provided for "other kinds of work". Analysis of the data recorded in these spaces revealed that business executives and Navy officers were acutely conscious, not only of their responsibilities, but also of the "mechanics" of getting work done. Large amounts of time were recorded under such headings as "paper work", "reading and answering mail", "consulting assistants", and the like. As a result, the list of items was expanded, and was divided into three sections, as follows:

1. Major responsibilities
2. Methods of getting work done
 - a. Through individual effort
 - b. Through contacts with other persons.

The basis of estimating time was changed from an hourly to a percentage basis, in order to overcome the disadvantage connected with differences in the length of working days from one organization to another and from one time to another.

The subjects were also asked to make their estimates on the basis of a month, rather than on the basis of a single day, in order to obtain a more representative estimate of their work.

Data obtained from the study of four business and sixteen Navy organizations were used as a basis for making eight separate revisions of the forms. Although subjects point out the fact that there is some overlap between the items in the final forms, they seldom find it necessary to write additional items in the spaces provided for "other kinds of work".

It has been found that variables which represent specific manipulative performances (such as using a pen or pencil, using calculating machines, using slide rules, and the like) do not give an adequate or representative account of administrative work. Some students of business

organization, as represented by Davis*, maintain that the primary functions of executive leadership are the planning, organizing and controlling of the activities of organization. These variables are very general in nature, and would appear to be quite complex in structure. When measurements are made on variables that are complex in structure, there is a possibility that important differences between persons will be obscured because the sub-elements of the variable may tend to cancel each other. While it is desirable to avoid this cancelling effect insofar as possible, it seems necessary to describe administrative work in rather broad, general terms if realistic results are to be obtained.

Reliability

The work analysis forms were administered to 32 officers in a Naval District Command Staff. One month later the forms were administered again to the same officers. The correlations between the scores obtained in the first study and those obtained in the second study are shown in the following table.

TABLE E1. CORRELATION OF FIRST SCORE WITH SECOND SCORE

N = 32

Item No.	Item	r
<u>Per Cent of Time Spent in Work with Persons</u>		
12	Contacts with Persons (total time)	.57
13	Attending Conferences	.33
14	Consultation with Seniors	.43
15	Consultation with Peers	.80
16	Consultation with Juniors	.65
17	Consultation with Outside Persons	.68
18	Interviewing Personnel	.63
19	Making Speeches within Organization	.64
20	Making Speeches outside Organization	.41
21	Attending Meetings outside Organization	.52
22	Classroom Teaching and Instruction	.81

* Davis, Ralph C. Industrial Organization and Management. New York: Harper, 1940.

TABLE El. CORRELATION OF FIRST SCORE WITH SECOND SCORE
(Continued)

N = 32

Item No.	Item	r
<u>Per Cent of Time Spent in Individual Effort</u>		
11	Individual Effort (total time)	.57
23	Observation	.18
24	Reading and Answering Mail	.36
25	Examining Reports	.57
26	Writing Reports	.66
27	Reading Technical Publications	.28
28	Writing for Publication	.59
29	Reflection	.73
30	Mathematical Computation	.62
31	Preparing Charts	.43
32	Use of Instruments and Machines	.67
<u>Per Cent of Time Spent in Major Responsibilities</u>		
33	Inspection	.51
34	Research	.59
35	Planning	.49
36	Preparing Procedures	.55
37	Coordination	.60
38	Evaluation	.58
39	Interpretation	.18
40	Supervision	.03
41	Personnel Functions	.46
42	Public Relations	.83
43	Professional Consultation	.61
44	Negotiations	.83
45	Scheduling, Routing	.38
46	Technical and Professional Performance	.59

The test - retest correlations of items which describe work with other persons are higher, on the average, than those that describe individual effort or major responsibilities.

The test - retest correlations are below .40 for such items as attending conferences, observation, reading and answering mail, reading technical publications, interpretation, supervision, and scheduling. The correlations are higher than .70 for such items as consulting peers, teaching, reflection, public relations, and negotiations.

Two important factors must be taken into account in the interpretation of these results. The first is the fact that the tasks and operations of the organization may have changed during the interval of time between the two studies. Organization change would tend to lower the correlations. The second is the fact that test - retest correlations of scores derived from single items are usually found to be markedly lower than those of scores which consist of the sums of a large number of items. No method has been discovered for summing the items in the work analysis forms so as to derive a single meaningful score.

Validity

In the study of a Naval Air Station, 34 officers kept a log of work performance for a period of three days. The logs were collected, and several days later the officers made estimates of the amount of time they had spent in various kinds of work during the period covered by the log. The correlations between logged time and estimated time are shown in the following table.

TABLE E2. CORRELATION BETWEEN LOGGED TIME AND ESTIMATED TIME

Variable	r
Conversing with other person (face to face and telephone)	.48
Attending meetings	.86
Classroom teaching	-.05
Observation	.52
Reading and answering mail	.62
Reading reports	.41
Writing reports	.66
Planning	-.02
Reflection	-.27
Research and investigation	-.11
Operating machines (e.g., flying planes)	.48

The results suggest that there is a fairly high degree of correspondence between logged time and estimated time for objectively observable performances such as talking with other persons, reading and answering mail, reading and writing reports, and operating machines. Low correlations are obtained for those kinds of work for which very small amounts of time were logged or estimated. Classroom teaching and research are examples of this effect. More subjective, less readily observable performances, such as planning and reflection are not estimated in terms that correspond highly with time recorded on the log. A number of the officers, when interviewed regarding this phenomenon,

expressed the feeling that their estimates of time spent in planning were more accurate than the log, for the reason that they were not always aware at the moment that what they were doing constituted planning.

Administration and Scoring

The Work Analysis Forms are self administering questionnaires. Complete directions are contained on the forms. No additional instructions are required, except perhaps the suggestion that the subject check to make sure that his estimates add up to one hundred per cent for each section of the test.

No scoring key is required. A subjects' estimate of the per cent of time spent in a given kind of work is his score for that item.

Norms

There are no norms for the Work Analysis Forms. The average scores shown in the following tables, which are based on data from six ships and six command staffs, indicate that performance differs from one position to another.

Commanding officers (CO) of ships spend more time than other officers in consulting juniors, examining reports, inspection and co-ordination.

Executive officers (XO) spend more time than others in consulting seniors, interviewing personnel, reading and answering mail, and personnel functions.

Operations officers (Op) spend more time in consulting peers, reading technical publications, preparing charts, reflection, planning and negotiations.

Communications officers (Com) exceed other officers in the amount of time spent in the use of instruments and machines and in scheduling and routing.

Supply officers (Sup) spend more time than other officers in personal contacts, consulting outside persons, writing reports, evaluation, professional consultation, and technical and professional performances.

Engineering officers (Eng) and Electrical officers (Elec) exceed in time spent in classroom teaching, observation, and supervision.

These results appear to be consistent with the duties and performance requirements associated with the different positions.

TABLE E3. AVERAGE PER CENT OF TIME SPENT IN WORK WITH PERSONS
BY NAVY OFFICERS IN SEVEN POSITIONS ABOARD SHIP

Item	Average per cent of time						
	CO	XO	Op	Com	Sup	Eng	Elec
12 Personal Contacts	65	55	47	55	65	60	38
13 Attend Conferences	6	7	8	7	8	8	6
14 Consult Seniors	9	18	16	16	9	11	13
15 Consult Peers	5	4	21	15	18	12	12
16 Consult Juniors	58	44	32	29	35	42	30
17 Consult Outsiders	6	6	8	8	14	7	13
18 Interview Personnel	4	14	5	6	7	3	8
19 Speeches In	1	2	2	3	3	4	6
20 Speeches Out	1	0	0	2	0	0	0
21 Attend Meetings Out	3	1	1	4	1	2	2
22 Classroom Teaching	4	2	4	9	5	10	10

TABLE E4. AVERAGE PER CENT OF TIME SPENT IN INDIVIDUAL EFFORT
BY NAVY OFFICERS IN SEVEN POSITIONS ABOARD SHIP

Item	Average per cent of time						
	CO	XO	Op	Com	Sup	Eng	Elec
11 Individual Effort	35	45	53	45	34	40	62
23 Observation	16	21	6	15	19	21	26
24 Read Mail	21	30	23	12	15	20	6
25 Exam. Reports	25	18	8	11	18	16	18
26 Writing Reports	8	13	16	16	19	11	15
27 Read Tech. Publ.	11	6	19	13	11	10	10
28 Write for Publ.	1	0	0	2	0	2	0
29 Reflection	14	7	20	10	9	7	6
30 Math Comp.	0	0	1	5	4	5	4
31 Preparing Charts	1	3	7	5	5	3	6
32 Use of Machines	2	1	2	10	2	4	9

TABLE E5. AVERAGE PER CENT OF TIME SPENT IN MAJOR RESPONSIBILITIES BY NAVY OFFICERS IN SEVEN POSITIONS ABOARD SHIP

Item	Average per cent of time						
	CO	XO	Op	Com	Sup	Eng	Elec
33 Inspection	16	10	7	8	14	13	12
34 Research	2	3	7	10	4	5	7
35 Planning	15	13	17	10	10	10	6
36 Prep. Procedures	7	6	11	6	5	7	5
37 Coordination	14	9	10	8	10	8	4
38 Evaluation	10	10	8	9	11	7	6
39 Interpretation	5	6	4	3	5	8	7
40 Supervision	8	12	10	15	11	14	23
41 Personnel	9	17	6	6	4	7	13
42 Public Relations	3	0	2	2	2	2	2
43 Prof. Consult	5	3	4	5	8	6	5
44 Negotiations	3	9	12	5	2	5	5
45 Scheduling, Routing	2	2	1	11	5	5	5
46 Tech. Performances	1	0	1	2	9	3	0

The results for command staffs are shown in the following tables. The officers in these staffs occupy high level positions. Their functions are of an administrative and coordinative nature. They do not ordinarily act as practitioners. However, each does perform specialized services connected with his own profession.

Commanders (Cdr) of command staffs are found to spend more time than other members of their staffs in attending conferences, consulting juniors, making speeches, individual effort, observation and inspection.

Chief staff officers (ChSt) spend more time than others in reading and answering mail, examining reports, coordination and supervision.

Planning officers (Plan) spend comparatively more of their time in consulting seniors, consulting peers, reflection, and planning.

Personnel officers (Pers) exceed other officers in time spent in reading and answering mail, preparing procedures and in personnel functions.

Administration officers (Adm) spend comparatively large amounts of their time in consulting seniors, coordination, evaluation and interpretation.

Public information officers (Pub Inf) spend large proportions of their time in consulting outside persons, writing for publication, and public relations.

TABLE E6. AVERAGE PER CENT OF TIME SPENT IN WORK WITH PERSONS
BY NAVY OFFICERS IN NINE POSITIONS IN COMMAND STAFFS

Item	Average per cent of time								
	Cdr	ChSt	Plan	Pers	Adm	Pub	Leg	Op	Sup
		Gen		Inf					
12 Personal Contacts	37	40	53	55	43	57	47	40	71
13 Attend Conferences	13	9	11	12	12	11	8	13	9
14 Consult Seniors	9	14	27	20	25	16	23	22	12
15 Consult Peers	13	7	33	20	28	12	12	27	14
16 Consult Juniors	47	40	18	30	23	19	37	17	34
17 Consult Outsiders	4	18	9	10	7	32	14	10	27
18 Interview Personnel	2	4	0	5	5	0	4	2	0
19 Speeches In	4	3	0	0	0	1	0	2	0
20 Speeches Out	2	0	0	0	0	0	1	0	0
21 Attend Meetings Out	5	2	2	2	0	8	1	7	3
22 Classroom Teaching	1	2	0	0	0	1	0	0	0

TABLE E7. AVERAGE PER CENT OF TIME SPENT IN INDIVIDUAL EFFORT
BY NAVY OFFICERS IN NINE POSITIONS IN COMMAND STAFFS

Item	Average per cent of time								
	Cdr	ChSt	Plan	Pers	Adm	Pub	Leg	Op	Sup
		Gen		Inf					
11 Individual Effort	63	60	47	45	57	43	53	60	29
23 Observation	20	9	5	10	8	10	7	12	13
24 Read Mail	20	31	20	35	23	25	26	25	20
25 Exam. Reports	20	28	10	10	18	19	22	10	22
26 Writing Reports	6	15	15	7	20	19	23	22	15
27 Read Tech. Publ.	12	5	10	5	15	6	9	8	16
28 Write for Publ.	1	0	1	5	5	14	1	0	1
29 Reflection	14	11	32	22	7	10	12	11	10
30 Math Comp.	2	1	3	3	0	2	0	3	2
31 Preparing Charts	3	0	1	3	2	5	0	7	1
32 Use of Machines	2	0	3	0	3	0	0	2	0

TABLE E8. AVERAGE PER CENT OF TIME SPENT IN MAJOR RESPONSIBILITIES BY NAVY OFFICERS IN NINE POSITIONS IN COMMAND STAFFS

Item	Average per cent of time								
	Cdr	ChSt	Plan	Pers Gen	Adm	Pub Inf	Leg	Op	Sup
33 Inspection	18	5	3	4	7	5	4	10	19
34 Research	7	2	10	11	10	11	8	12	12
35 Planning	19	17	40	20	8	9	10	20	12
36 Prep. Procedures	8	6	10	15	10	2	6	7	7
37 Coordination	10	23	18	15	23	7	9	5	8
38 Evaluation	10	11	8	10	15	13	14	10	6
39 Interpretation	5	9	3	4	10	3	6	5	5
40 Supervision	5	14	0	1	5	7	4	6	4
41 Personnel	9	2	0	10	5	3	5	3	5
42 Public Relations	4	4	2	1	0	30	2	1	2
43 Prof. Consult	4	4	3	6	5	3	17	8	14
44 Negotiations	1	2	0	3	2	3	4	13	3
45 Scheduling, Routing	0	0	2	0	0	3	4	0	3
46 Tech. Performances	0	0	0	0	0	0	7	0	0

Legal officers (Leg) exceed other officers in the amount of time they devote to writing reports and acting as professional consultants.

Operation Officers (Op) are found, as were operations officers aboard ship, to spend comparatively large proportions of their time in conferences and outside meetings, in preparing charts, research and negotiations.

Supply officers (Sup) also parallel supply officers aboard ship in some of their performances. They are found to spend comparatively large amounts of time in personal contacts, consulting outside persons, reading technical publications, inspection and professional consultation.

Here, again, it is found that the performances which differentiate any one position from another "make sense" in terms of what would be expected for that particular speciality.

Use of the Forms

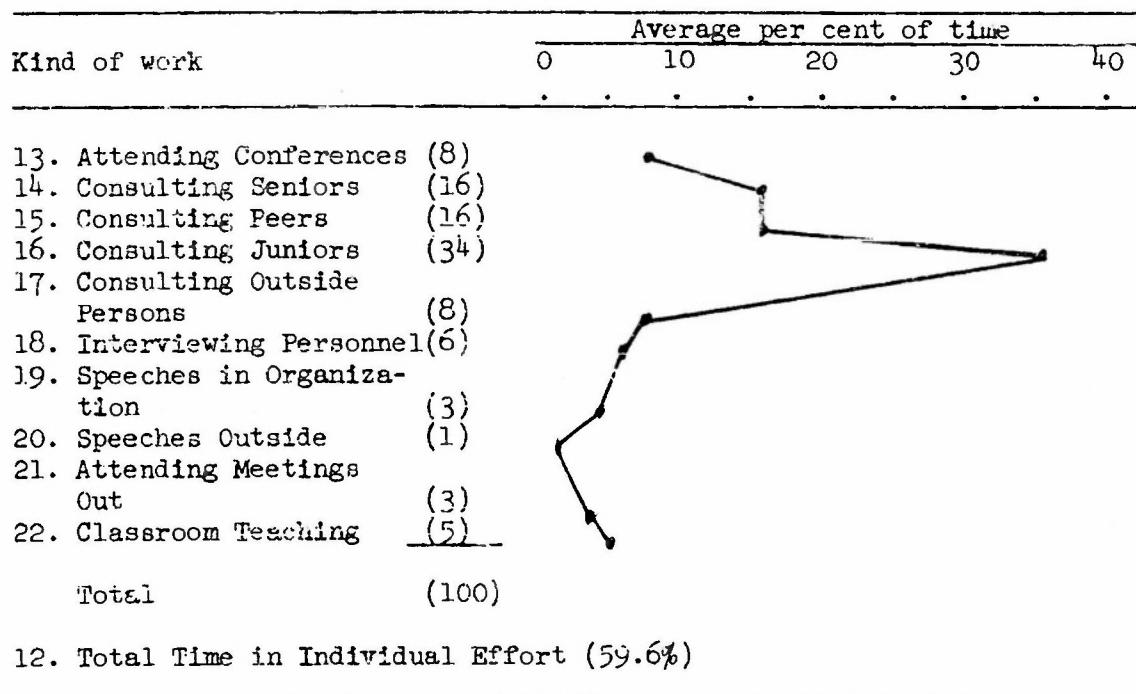
The Work Analysis Forms were devised for research purposes. However, it is believed that they have practical utility for the study of personal as well as organizational performance.

Job specification manuals can only indicate what ought to be done. They do not necessarily indicate what is being done. Performance is likely to change from time to time in order to cope with changes in organizational operations. It would appear that an evaluation of organization which asks, "What is being done?" as well as, "How good a job is being done?" might be more effective than an evaluation which asks only the latter question.

For the purposes of administrators who might wish to use the forms, it is believed that a profile of the scores of individuals will provide the most useful record of the data. A profile of scores is easy to prepare, is easy to read, and may be readily compared with other profiles. The following profiles are based on the average scores of 470 Navy officers.

WORK PATTERN: PERSONAL CONTACTS

Average Scores of 470 Navy Officers



WORK PATTERN: INDIVIDUAL EFFORT

Kind of work	Average per cent of time				
	0	10	20	30	40
23. Observation	(16)				
24. Read and Answer Mail	(20)				
25. Examine Reports	(15)				
26. Write Reports	(14)				
27. Read Tech. Publ.	(10)				
28. Write for Publ.	(2)				
29. Reflection	(10)				
30. Math Comp.	(4)				
31. Prepare Charts	(4)				
32. Use Machines	(4)				
Total	(100)				

11. Total Time in Individual Effort (40.4%)

WORK PATTERN: ADMINISTRATIVE RESPONSIBILITIES

Kind of responsibility	Average per cent of time		
	0	10	20
33. Inspection	(11)		
34. Research	(7)		
35. Planning	(12)		
36. Preparing Procedures	(7)		
37. Coordination	(10)		
38. Evaluation	(9)		
39. Interpretation	(7)		
40. Supervision	(11)		
41. Personnel Functions	(7)		
42. Public Relations	(3)		
43. Prof. Consultation	(6)		
44. Negotiations	(2)		
45. Scheduling	(4)		
46. Tech. Performances	(4)		
Total	(100)		

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Name _____

Methods of Discharging Responsibilities

The purpose of this analysis is to determine the relative proportion of time spent in the utilization of various methods of getting work done.

Please consider your entire range of duties from day to day during the past month. Attempt to account for as much of your time as possible in terms of: (a) time spent in various types of contacts with persons, and (b) time spent in various types of individual effort. Before each item please write the percentage of time spent in the work method described.

(%) A. Per cent of time spent in contacts with persons.
 (%) B. Per cent of time spent in individual effort.
 (100%) C. Total time spent in getting work done.

In parts A and B below it is requested that you account in greater detail for your time spent in these two types of work methods.

A. Time spent in contacts with persons: (including committee meetings, interviews, telephone conversations, liaison, making speeches, meeting with outside groups, as well as face to face contacts).

Please account below for 100% of your time spent with persons. In the space before each item please write the approximate percentage of time spent in the work method described.

(%) 1. Attending committee meetings and conferences (with self or other person acting as chairman)
 (%) 2. Consulting with superior officers
 (%) 3. Consulting with associates at same echelon
 (%) 4. Consulting with assistants and subordinates
 (%) 5. Consulting with outside persons
 (%) 6. Interviewing personnel, applicants, etc.
 (%) 7. Making speeches within the organization
 (%) 8. Making speeches to outside groups
 (%) 9. Attending meetings of outside groups
 (%) 10. Teaching, classroom instruction
 (%) 11. Other: _____

(100 %) Total time spent in contacts with persons.

(Continue to Next Page)

Methods of Discharging Responsibilities (Con't)

B. Time spent in individual effort: (including personal observation, reading, thinking, computation, writing, dictation, use of instruments, forms and equipment).

Please account below for 100% of your time spent in individual effort.

- (%) 1. Observation
- (%) 2. Reading and answering mail
- (%) 3. Examining reports (including correspondence prepared by others)
- (%) 4. Preparing and writing reports
- (%) 5. Reading technical publications
- (%) 6. Writing for publication
- (%) 7. Thinking and reflection
- (%) 8. Mathematical computation
- (%) 9. Preparing charts, tables and diagrams
- (%) 10. Operation or use of instruments, machines, charts, examination forms
- (%) 11. Other: _____

(100 %) Total time spent in individual effort.

(Continue to Next Page)

PROPORTION OF TIME DEVOTED TO MAJOR RESPONSIBILITIES

The purpose of this analysis is to determine the relative proportion of your time devoted to major administrative and operative responsibilities, disregarding the methods of accomplishment.

Please consider your entire range of responsibilities from day to day. Attempt to account as accurately as possible for the relative percentage of time devoted to various administrative and technical functions.

Before each item below please write the approximate percentage of time spent in the responsibility described.

- (%) 1. Inspection of the Organization - Direct observation and personal inspection of installations, buildings, equipment, facilities, operations, services or personnel--for the purpose of determining conditions and keeping informed.
- (%) 2. Investigation and Research - Acts involving the accumulation and preparation of information and data. (Usually prepared and presented in the form of written reports.)
- (%) 3. Planning - Preparing for and making decisions which will affect the aims or future activities of the organization as to volume or quality of business or service. (Including thinking, reflection and reading, as well as consultations and conferences with persons relative to short term and long range plans).
- (%) 4. Preparation of Procedures and Methods - Acts involving the mapping of procedures and methods for putting new plans into effect, as well as devising new methods for the performance of operations under existing plans.
- (%) 5. Coordination - Acts and decisions designed to integrate and coordinate the activities of units within the organization or of persons within units, so as to achieve the maximal over-all efficiency, economy and control of operations.
- (%) 6. Evaluation - Acts involving the consideration and evaluation of reports, correspondence, data, plans, decisions or performances in relation to the aims, policies and standards of the organization.
- (%) 7. Interpretation of Plans and Procedures - Acts involving the interpretation and clarification for assistants and other personnel of directives, regulations, practices, and procedures.
- (%) 8. Supervision of Technical Operations - Acts involving the direct supervision of personnel in the performance of duties.
- (%) 9. Personnel Activities - Acts involving the selection, training, evaluation, motivation or disciplining of individuals, as well as acts designed to affect the morale, motivation, loyalty or harmonious cooperation of personnel.
- (%) 10. Public Relations - Acts designed to inform outside persons regarding the program and functions of the organization, to obtain information regarding public sentiment, or to create a favorable attitude toward the organization.
- (%) 11. Professional Consultation - Giving professional advice and specialized assistance on problems of a specific or technical nature to persons within or outside the organization. (Other than technical supervision and guidance of own staff personnel).
- (%) 12. Negotiations - Purchasing, selling, negotiating contracts or agreements, settling claims, etc.
- (%) 13. Scheduling, Routing and Dispatching - Initiating action and determining the time, place and sequence of operations.
- (%) 14. Technical and Professional Operations - The performance of duties specific to a specialized profession (e.g. practice of medicine, conducting religious services, classroom teaching, auditing records, operating machines or equipment).

100 % TOTAL TIME SPENT IN MAJOR RESPONSIBILITIES

F. LEADER BEHAVIOR DESCRIPTIONS

The Leader Behavior Descriptions were developed jointly by staff members of the Ohio State Leadership Studies. Approximately 1800 items were constructed. The processing of these items has been described by Hemphill.* An attempt was made to devise items which would represent ten independent dimensions of observable behavior. This result was only partially achieved. The items were found to be rather highly intercorrelated. A factor analysis based primarily on the results from small groups, revealed only four independent dimensions. These were identified as behaviors which (1) initiate structure in social interaction, (2) show consideration for the followers as individuals, (3) emphasize productive effort, and (4) show awareness of situational tensions.

A small number of highly selected items has been used in the Naval Leadership Studies. Items which represented four of the original hypothetical dimensions, rather than the factored dimensions, were employed. The hypothetical dimensions selected for the final form used in the Navy studies were as follows:

- (1) Communication - Six items descriptive of communicative behavior.
- (2) Representation - Four items descriptive of speaking and acting in behalf of the group.
- (3) Organization - Four items descriptive of behavior which prescribe ways of doing things.
- (4) Integration - Four items descriptive of behavior which tends to hold the group together as a working unit.

The following items were added to the original list:

- (5) Relations with Juniors - Two items descriptive of relations with juniors.
- (6) Relations with Seniors - Two items descriptive of relations with seniors.

These items were selected on the basis of the following criteria:

- (1) Contribution to high odd-even reliability of the total scale.
- (2) Contribution to the internal consistency of the scale.
- (3) Contribution to low inter-scale correlation.
- (4) Contribution to low correlation with a criterion of "good" leadership.
- (5) Appropriateness of the items for use in Naval organizations.

* Hemphill, J. K. Leader Behavior Description. Columbus: Ohio State Leadership Studies Staff Report, 1950.

An extension of these criteria also determined the selection of the hypothetical dimensions or scales. An attempt was made to select items and scales which would describe behavior, but not evaluate behavior.

The following copy of the Leader Behavior Descriptions represents the third revision of the items for use in the Navy studies.

In Table F1 are shown the frequency distributions of the responses of 48 officers in an LST squadron who described their own behavior. Forty of these officers were also described, each by a single peer selected at random. It will be observed that when officers describe their own behavior the A (always) category is used somewhat more frequently than when their behavior is described by peers. Hemphill reports that leaders in describing their own behavior give the "always" response more frequently than do followers in describing those leaders.

TABLE F1. FREQUENCY DISTRIBUTION OF DESCRIPTIONS OF 48 OFFICERS AS DESCRIBED BY THEMSELVES AND AS DESCRIBED BY 40 PEERS

Item	DESCRIBED BY SELF						DESCRIBED BY OTHERS					
	Response						Response					
	A	B	C	D	E	O	A	B	C	D	E	O
1 Communication	31	17					18	20	2			
11 Communication	15	26	7				11	22	6		1	
21 Communication	21	23	4				12	14	10	4		
31 Communication	27	19	1		1		19	17	4			
41 Communication	37	7	3		1		20	15	4		1	
51 Communication	24	23	1				13	21	5	1		
2 Representation	2	22	16	3	3	2	5	20	11	4		
12 Representation	10	9	16	5	3		8	12	9	4	5	2
22 Representation	6	8	9	13	12		4	3	14	9	5	4
32 Representation	32	12	4				19	18	2	1		
3 Organization	9	29	5	4		1	14	23	3			
13 Organization	30	13	5				22	12	5		1	
23 Organization	16	29	3				15	21	4			
33 Organization	31	14	2		1		17	19	3	1		
4 Integration	14	13	15	6			7	15	14	4		
14 Integration	28	20					19	12	6	1	1	1
24 Integration	33	13	2				18	18	4			
34 Integration	14	27	6		1		16	19	4	1		
35 Juniors	21	20	7				19	17	3	1		
55 Juniors	25	22	1				19	9	12			
36 Seniors	25	18	4	1			22	15	2			
56 Seniors	27	18	3				19	17	3		1	

A = Always B = Often C = Occasionally D = Seldom E = Never
 O = Omitted

The intercorrelations among the Leadership Scales are shown in Tables F2 and F6. The results for Table F2 are based on the intercorrelations among the scores of 42 Navy officers on a cruiser.

TABLE F2. INTERCORRELATIONS AMONG LEADER BEHAVIOR SCORES FOR NAVY OFFICERS ON A CRUISER

Scale	47	48	49	50	51	52
47	(67)	56	57	.01	.42	.44
48	.56	(50)	.60	-.06	.43	.43
49	.57	.60	(.82)	.12	.60	.61
50	.01	-.06	.12	(.28)	.13	.13
51	.42	.43	.60	.13	(.72)	.72
52	.44	.43	.61	.13	.72	(.72)

A factor analysis of this table of correlations resulted in three factors, with loadings as follows:

TABLE F3. FACTOR LOADINGS BEFORE ROTATION

Scale	I	II	III
47	.71	-.33	-.01
48	.68	-.25	-.29
49	.86	-.06	.05
50	.13	.13	.42
51	.76	.37	-.03
52	.77	.35	.01

The residuals are shown in Table F4.

TABLE F4. RESIDUALS

Scale	47	48	49	50	51	52
47		-.01	-.06	-.04	.00	.01
48		-.01	.01	.01	.00	.00
49		-.06	.01	-.01	-.03	-.03
50		-.04	.01	-.01	.00	-.02
51		.00	.00	-.03	.00	.01
52		.01	.00	-.03	-.02	.01

The final rotated factor loadings are shown in Table F5. It will be observed that Factor I has rather high loadings on all scales, except Representation. The highest loading is on Integration. This factor has been identified as the maintenance of organizational integrity.

Factor II has high loading only on scales 51 and 52, Relations with juniors and seniors. This factor may then be identified as the maintenance of close interpersonal relations.

Factor III shows high loadings only on Item 50, Representation. This factor might be identified as the maintenance of extra-group interactions.

TABLE F5. ROTATED FACTOR LOADINGS

Scale	I	II	III
47 Com	.76	-.15	.10
48 Org	.75	-.07	-.18
49 Int	.83	.15	.19
50 Rep	.02	.15	.44
51 Jrs	.63	.54	.09
52 Srs	.65	.52	.13

The intercorrelations among the scores of 32 Navy officers in a Naval District Command Staff are shown in Table F6.

TABLE F6. INTERCORRELATIONS AMONG LEADER BEHAVIOR SCORES

Scales	47	48	49	50	51	52
47 Com	(78)	56	78	10	16	19
48 Org	56	(56)	50	37	33	28
49 Int	78	50	(78)	41	17	34
50 Rep	10	37	41	(41)	08	25
51 Jrs	16	33	17	08	(83)	83
52 Srs	19	28	34	25	83	(83)

A factor analysis of this table also results in three factors. The rotated factor loadings are shown in the table below.

TABLE F7. ROTATED FACTOR LOADINGS

Scale	I	II	III
47 Com	90	02	00
48 Org	54	16	39
49 Int	91	03	25
50 Rep	19	06	64
51 Jrs	20	87	13
52 Srs	29	88	15

Factor I is shown to have high loadings on Integration, Communication, and Organization. The loadings for Juniors and Seniors are not as high as were found for the previous organization.

Factor II shows high loadings only on Relations with Juniors and Seniors. In this organization, the maintenance of organizational integrity and the maintenance of close interpersonal relations appear to be more clearly differentiated.

Factor III shows the highest loading on Representation, with moderate loadings on organization and integration. Again, this factor may be identified as the maintenance of extra-group interactions.

Although the scores for these scales were based on a very small number of items, they appear to be measuring rather similar behaviors in two different organizations. Additional factorial analyses of these scales yield similar results, with only minor variations.

The first two factors appear to be similar to the two major factors obtained by Hemphill in the study of diverse organizations. However, in the present study, Representation appears with high loadings on a third factor, suggesting that this form of behavior as exhibited in large, stratified organizations, differs in significance from the same behavior when studied in smaller organizations.

Reliability

The best evidence of the reliability of the Leader Behavior Descriptions is provided by the results obtained in a Naval District Command Staff which was studied on two separate occasions, with one month intervening between the two studies. The test-retest correlations obtained from this organization are shown in Table F8. Also shown in this table are the correlations between the odd items and the even items for each scale or hypothesized dimension. It will be observed that all the test-retest correlations as well as most of the odd-even correlations are above .50. The odd-even reliabilities are about as high as can be expected for scores based upon one to three items.

The correlations between the scores of two observers describing the same senior are also shown on Table F8. These correlations range from .04 to .44. It is apparent that these pairs of juniors are not in agreement when describing their immediate seniors' relationships with their seniors. They are in closer agreement when describing their seniors' integrative behavior, but none of the correlations indicates a high degree of agreement.

TABLE F8. RELIABILITY OF THE LEADER BEHAVIOR DESCRIPTIONS

Dimension	Odd-Even Correlations		Test-Retest		Two Observers	
	LST Squadron		District	District	Research	
	Self	Others*	Staff	Staff	Staff	Others**
Communication	.76	.85	.34	.70	.37	
Representation	.67	.66	.57	.60	.33	
Organization	.31	.75	.45	.67	.34	
Integration	.56	.53	.66	.79	.44	
Juniors	.50	.51	.62	.52	.36	
Seniors	.61	.55	.31	.74	.04	
Total	.93	.89	.83	.82	.39	
N	48	42	34	32	32	

* N = 42 Officers, each described by a single peer.

** N = 32 Seniors, each described by two juniors.

Validity

No claims are made for the validity of the Leader Behavior Descriptions. When an individual describes his own behavior and is also described by an observer, which description is the more accurate? The correlations between self descriptions and descriptions by others are shown in the following table (No. F9). It is apparent from the results shown in this table that self descriptions and descriptions by others are not in close agreement.

TABLE F9. CORRELATION OF SELF DESCRIPTIONS
WITH DESCRIPTIONS BY OTHERS

Scale	Air Station, Self vs Seniors	Submarines, Self vs Juniors	Research Staff, Self vs Seniors
47 Com	.34	.21	.09
48 Org	-.07	.18	.11
49 Int	-.03	.17	.24
50 Rep	.16	.15	.05
51 Jrs	.15	.31	.40
52 Srs	----	---	.36

N

This does not necessarily argue against the validity of self descriptions. It has been shown in a previous report that juniors who are not performing up to their own expectations tend to describe their seniors in less favorable terms, suggesting that descriptions by "others" need to be interpreted with as much caution as self descriptions.

The correlations between the Leader Behavior Descriptions and other variables which might be regarded as criteria of "goodness" of leadership are shown in Table F10. These are "level in organization hierarchy", "leadership ratings by seniors", and "nominations for best leader by juniors". It will be seen that none of the correlations is very high. Some are negative. The Leader Behavior Descriptions can not be used as substitutes for military leadership ratings by seniors, nominations for leadership by juniors, or for other criterion measures of leadership "quality".

It would appear that the attempt to devise items which are descriptive of behavior, but which are not highly correlated with criteria of leadership excellence, has been attended with some degree of success. It is believed that valuable information may be gained from the use of

measures which describe, but which do not evaluate. Other evaluative measures are available for use as criteria of the goodness or poorness of leader performance.

Norms

There are no norms for the Leader Behavior Descriptions. However, for purposes of reference and interpretation of findings, a table of average scores is shown below. These are the average scores of officers who occupy different positions aboard ship or in shore based command staffs.

TABLE F10. CORRELATION OF LEADER BEHAVIOR
SPLF DESCRIPTIONS WITH OTHER VARIABLES

Scales	Correlation coefficients							
	Level			Mil. Lead. Rating*			Nom**	
	Sub	Cruiser	C.S.	Sub	LST	Res		Sub
47 Com	.28	-.04	-.15	.16	-.02	---	.06	
48 Org	-.02	.09	-.06	.01	.02	.07	-.01	
49 Int	.02	-.12	-.10	.08	-.08	.21	.21	
50 Rep	.28	-.07	-.42	-.01	.30	---	.09	
51 Jrs	.26	.17	.10	.25	.02	.05	.32	
52 Srs	----	.14	-.08	----	-.14	.07	----	
N	69	42	32	69	49	47	69	

* = Military Leadership Rating by Seniors.

** = Nominations by Juniors for "Best" Leader.

Inspection of Table F11 reveals that Executive Officers in ships obtain the highest scores for communicative and organizing behavior. Communications officers describe themselves as engaging most frequently in integrative behavior. Supply officers and electrical officers act most frequently as representatives of the men in their units. Commanding officers and executive officers obtain the highest scores for maintaining harmonious working relations with juniors. Executive officers describe themselves much higher than do other officers in maintaining harmonious relations with seniors.

The data for shore-based command staffs are shown in Table F12. It will be seen that public information officers and legal officers describe themselves higher than do other officers in communication, relations with juniors, and relations with seniors. Supply officers describe themselves as highest in organizing behavior, while medical

officers engage more frequently in integrative behavior. Public information officers, as might be expected, speak and act more frequently as representatives of their organizations.

TABLE F11. AVERAGE SCORES OF NAVY OFFICERS IN DIFFERENT POSITIONS ABOARD SHIP (N = 6 SHIPS)

Item	Average Leader Behavior Score						
	CO	XO	OP	Com	Sup	Eng	Elec
47 Com	7.0	7.5	6.3	6.0	6.0	7.0	6.7
48 Org	6.3	7.5	6.0	6.0	6.3	7.0	6.2
49 Int	6.5	6.7	6.5	7.0	5.5	6.8	6.0
50 Rep	5.8	4.5	3.7	5.0	5.2	4.5	5.2
51 Srs	7.5	7.5	6.3	7.0	7.0	6.8	6.3
52 Jrs	6.5	7.7	6.0	6.8	6.2	6.2	5.7

CO = Commanding Officers

XO = Executive Officers

Op = Operations Officers

Com = Communications Officers

Sup = Supply Officers

Eng = Engineering Officers

Elec = Electrical Officers

TABLE F12. AVERAGE SCORES OF NAVY OFFICERS IN DIFFERENT POSITIONS IN COMMAND STAFFS (N = 6 STAFFS)

Item	Average Leader Behavior Score										
	Cdr	ChSt	Plan	Pers	Pers	Adm	Pub	Leg	Op	Sup	Med
			Gen	Spec		Inf					
47 Com	6.3	7.1	6.8	7.0	7.0	5.5	8.0	7.7	6.7	7.3	7.1
48 Org	6.5	7.1	6.5	6.2	6.5	5.0	6.7	6.1	6.5	7.5	6.5
49 Int	7.0	6.8	6.2	6.3	7.0	5.0	7.2	7.4	7.1	6.7	7.5
50 Rep	5.0	5.7	4.3	2.5	5.5	3.2	6.2	4.4	3.1	4.2	6.0
51 Jrs	7.2	7.3	7.0	6.7	6.7	7.0	8.0	8.0	7.0	6.7	7.3
52 Srs	6.3	7.7	6.5	7.3	7.0	6.0	8.0	8.0	6.9	6.7	7.7

TABLE F13. CORRELATION OF LEADER BEHAVIOR: DESCRIPTIONS WITH OTHER VARIABLES

Scale	Echelon Level			Military Leadership			Nomination for Good Leaders		Sociometric Score				
	Subs	Cruiser	CS	Ratings			Subs	LST	Research	Subs	Cruiser	CS	
				Subs	LST	Research							
47 Com	.28	-.04	-.15	.16	-.02	---				.06	.04	-.23	-.24
48 Org	-.02	.09	-.06	.01	.02	.07				-.01	-.02	.02	.06
49 Int	.02	-.12	-.10	.08	-.08	.21				.21	-.02	-.08	-.37
50 Rep	.28	-.07	-.42	-.01	.30	---				.39	.03	-.10	-.48
51 Jrs	.26	.17	.10	.25	.02	.05				.32	.30	.17	-.63
52 Srs	----	.14	-.08	----	-.14	.07	----	----	----	----	.14	-.11	----
N	69	42	32	69	49	47	69	69	69	69	42	32	----

Administration and Scoring

The Leader Behavior Descriptions are self administering. The directions are printed on the test forms.

The scoring key is the same for each item. The scoring key for each item is shown below:

Scoring Key

<u>Response</u>	<u>Score</u>
Always	4
Often	3
Occasionally	2
Seldom	1
Never	0

The score for any one scale or dimension is obtained by summing the scores of the items in that particular scales. The items contained in each scale are shown below:

Communication score is the sum of items	1, 11, 21, 31, 41, 51
Representation score is the sum of items	2, 12, 22, 32
Organization score is the sum of items	3, 13, 23, 33
Integration score is the sum of items	4, 14, 24, 34
Relations with Juniors is the sum of items	35, 55
Relations with Seniors is the sum of items	36, 56
Total score is the sum of the scores of all the items.	

Use of the Scales

The Leader Behavior Descriptions were devised for research purposes. The items selected for use in the Navy studies show low correlations with various criteria of "good" leadership and, for this reason, can not be used as criteria of leadership quality. However, the different scales have been shown to be meaningfully and differentially related to other measures of leader performance and organization structure. An accumulation of such data should be of value in gaining an increased knowledge of the nature of leadership.

In future use, it would be desirable to employ scales composed of a larger number of items in order to improve their reliability.

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LEADER BEHAVIOR DESCRIPTIONS

The questions which follow make it possible to describe objectively the behavior of individuals in leadership positions. The items simply describe the leader's behavior; they do not judge whether the behavior is desirable or undesirable. Therefore, in no way are the questions to be considered a "test" either of the ability of the persons answering the items or of the quality of the leader's behavior. We simply want an objective description of what leaders actually do.

Note: The term, "group", as employed in the following items, refers to a department, division, or other unit of organization which is supervised by the person being described.

The term, "members", refers to all personnel in the unit of organization which is supervised by the person being described.

Name of the person you are describing _____

Name of the unit which he leads _____

Your name _____

C _____ R _____ O _____ I _____ St _____ Sr _____ T _____

DIRECTIONS:

1. READ each item carefully.
2. THINK about how frequently the leader engages in the behavior described by the item.
3. READ the five answers provided after the item and decide which one of the five most nearly expresses the frequency with which the leader engages in the behavior.
4. DRAW a line under the answer you have selected.

1. HE KEEPS INFORMED ABOUT THE WORK THAT IS BEING DONE.
A. always B. often C. occasionally D. seldom E. never

2. HE MAKES OUTSIDE CONTACTS FOR THE GROUP.
A. always B. often C. occasionally D. seldom E. never

3. HE SCHEDULES THE WORK TO BE DONE.
A. always B. often C. occasionally D. seldom E. never

4. HE WORKS RIGHT ALONG WITH THE GROUP.
A. always B. often C. occasionally D. seldom E. never

11. HE EXPLAINS WHY A PARTICULAR ACTION IS IMPORTANT.
A. always B. often C. occasionally D. seldom E. never

12. HE SELLS THE PUBLIC ON THE IMPORTANCE OF HIS GROUP.
A. always B. often C. occasionally D. seldom E. never

13. HE ASKS THAT MEMBERS FOLLOW ORGANIZATIONAL LINES.
A. always B. often C. occasionally D. seldom E. never

14. HE LOOKS OUT FOR THE WELFARE OF INDIVIDUAL MEMBERS.
A. always B. often C. occasionally D. seldom E. never

21. HE GIVES ADVANCE NOTICE OF CHANGES.
A. always B. often C. occasionally D. seldom E. never

22. HE SPEAKS IN PUBLIC IN THE NAME OF THE GROUP.
A. always B. often C. occasionally D. seldom E. never

23. HE FIGURES AHEAD ON WHAT SHOULD BE DONE.
A. always B. often C. occasionally D. seldom E. never

24. HE ENCOURAGES MEMBERS TO WORK AS A TEAM.
A. always B. often C. occasionally D. seldom E. never

31. HE KEEPS WELL INFORMED ABOUT THE PROGRESS OF THE GROUP.
A. always B. often C. occasionally D. seldom E. never

32. HE BACKS UP THE MEMBERS IN THEIR ACTIONS.
A. always B. often C. occasionally D. seldom E. never

33. HE ENCOURAGES THE USE OF CERTAIN UNIFORM PROCEDURES.
A. always B. often C. occasionally D. seldom E. never

34. HE MAKES IT PLEASANT TO BE A MEMBER OF THE GROUP.
A. always B. often C. occasionally D. seldom E. never

35. HE ESTABLISHES CORDIAL RELATIONS WITH SUBORDINATES.
A. always B. often C. occasionally D. seldom E. never

36. HE ESTABLISHES CORDIAL RELATIONS WITH SUPERIORS.
A. always B. often C. occasionally D. seldom E. never

41. HE KNOWS WHO IS RESPONSIBLE FOR EACH JOB.
A. always B. often C. occasionally D. seldom E. never

51. HE KEEPS THE GROUP INFORMED.
A. always B. often C. occasionally D. seldom E. never

55. HE MAINTAINS A CLOSE WORKING RELATIONSHIP WITH SUBORDINATES.
A. always B. often C. occasionally D. seldom E. never

56. HE MAINTAINS A CLOSE WORKING RELATIONSHIP WITH SUPERIORS.
A. always B. often C. occasionally D. seldom E. never

G. EFFECTIVENESS RATINGS

Effectiveness ratings are useful when it is desired to obtain judgments relative to "goodness" of performance. It is the aim of personnel selection procedures to obtain persons who will perform satisfactorily in the positions to which they are to be assigned. Promotions and salary increases are in many organizations based upon effectiveness of performance. In military organizations, where there are few objective criteria such as increases in production rates or volume of sales, it becomes necessary to rely upon human judgment in order to arrive at evaluations of performance. Much experimental work has demonstrated that such evaluations are likely to be made in all or none terms. If a person is rated as very good on one item he is also likely to be rated as very good on other items by the same rater. There has also been observed a tendency, especially in military organizations, for most persons to be rated toward the "very good" or "excellent" end of the scale. Few persons are rated as "average" or "below average". In order to overcome the latter difficulty, the present research has employed a rating scheme which requires all the immediate juniors being rated by a given senior to be ranked in order of merit. The same scheme has been employed in obtaining effectiveness ratings of units of organization.

Samples of two rating scales are shown on the following pages. The first is a form for obtaining ratings on military leadership. The second is a generalized rating scale which may be used for obtaining ratings of either persons or units of organization or any observable performance or characteristic. Both of these forms involve a rank ordering of persons or units, combined with a rating of each person or unit in terms of "Poor", "Fair", "Good" or "Excellent". The scoring key for these forms is shown on the scale for rating military leadership.

These rating scales are self administering.

No data are available relative to the reliability of the scales. However, it was found that the average ratings of three officers and the average ratings of three enlisted men in a squadron command staff were correlated to an extent indicated by a coefficient of .87 when rating ten submarines on the variable, "efficient ship". The correlations between "efficient ship" ratings and other variables are shown in Table G1.

TABLE G1. "EFFICIENT SHIP" RATINGS CORRELATED WITH OTHER VARIABLES (RANK ORDER CORRELATIONS)

Other variables	Correlation coefficients of "efficient ship" ratings	
	By Officers	By Enlisted Men
1. "Happy Ship" Ratings by H. Q. Officers	.6	.5
2. "Happy Ship" Ratings by H. Q. Enlisted Men	.6	.7
3. Reenlistment Rate on Ship	.1	.2
4. Total Disciplinary Offenses	-.2	-.2
5. Torpedo Firing Accuracy	.6	.7

The correlations between "military leadership" ratings and other variables are shown in Table G2. The subjects are 69 officers aboard submarines and some officers in a Naval research staff.

TABLE G2. CORRELATION OF MILITARY LEADERSHIP RATINGS WITH OTHER VARIABLES (PEARSON CORRELATIONS)

Variables	Correlation coefficients	
	Submarines	Research
1. Military Rank	.16	.15
2. Level in Organization	.19	.14
3. Time in Position	.21	-.01
4. Fitners Reports--Former	.10	
5. Fitners Reports--Present	.08	
6. Sociometric Score (Received)	.45	.20
7. Unit Morale--Own Ship	.09	
8. Responsibility	.12	-.02
9. Authority	.03	-.22
10. Delegation	.10	-.06

The "efficient ship" ratings are fairly highly correlated with several other measures of ship effectiveness. However, the "military leadership" ratings are not found to be highly correlated with other potential leadership criteria.

RATINGS BY SENIORS

Name of person making ratings: _____ Rank _____

Variable being rated: MILITARY LEADERSHIP

We would like for you to evaluate the officers who are under your immediate direction, in terms of their military leadership. Which ones are the best leaders?

On the first line, enter the name of the officer whom you consider to be the best leader. List the remaining officers under your direction in order of their merit as leaders. After each name, check one of the descriptive terms; Poor, Fair, Good, Excellent, to indicate how good a leader you regard him to be.

(LIST IN ORDER OF MERIT)

(How good a leader? Check one)

	<u>Names of Officers</u>	<u>Poor</u>	<u>Fair</u>	<u>Good</u>	<u>Excellent</u>
1. Best	_____	3*	5*	7*	9*
2. Next Best	_____	2	4	6	8
3. Next	_____	4	3	5	7
4. Next	_____	0	2	4	6
5. Next	_____	0	1	3	5
6. Next	_____	0	0	2	4
7. Next	_____	0	0	1	3
8. Next	_____	0	0	0	2
9. Next	_____	0	0	0	1
10. Next	_____	0	0	0	0

* These numbers represent the scoring key for the rating scales.

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RATING SHEET

Ratings of: _____

Ratings by: _____

Rated on: _____

<u>(List in rank order)</u>	<u>(How good?)</u>				<u>Check one)</u>
<u>Names</u>	<u>Poor</u>	<u>Fair</u>	<u>Good</u>	<u>Excellent</u>	
1. Best _____	—	—	—	—	
2. Next Best _____	—	—	—	—	
3. Next _____	—	—	—	—	
4. Next _____	—	—	—	—	
5. Next _____	—	—	—	—	
6. Next _____	—	—	—	—	
7. Next _____	—	—	—	—	
8. Next _____	—	—	—	—	
9. Next _____	—	—	—	—	
10. Next _____	—	—	—	—	

H. CAUTIONS

A number of cautions should be observed in attempting to use these methods.

1. The methods were devised for research purposes. The data were collected in a research setting. Somewhat different results might have been obtained had the data been collected in situations where the findings would have been used for purposes of officer selection or evaluation.
2. The reliabilities of some of the forms are not as high as is usually desired for individual diagnosis and selection. These forms should be increased in length in order to raise their reliabilities before they are used for individual diagnosis.
3. Some of the kinds of analyses employed in this research are too time consuming for use by operating organizations. In practical application, profiles of the raw scores of individuals would probably constitute the most usable presentation of the data.
4. The methods should be regarded as tools, not as remedies. They are useful only as means of obtaining descriptions of what exists at a particular time and place. Results obtained from use of the methods can not tell an administrator what should be done. They can serve only the purpose of providing him with information. He must then rely upon judgment in deciding what, if anything, should be done with the information.